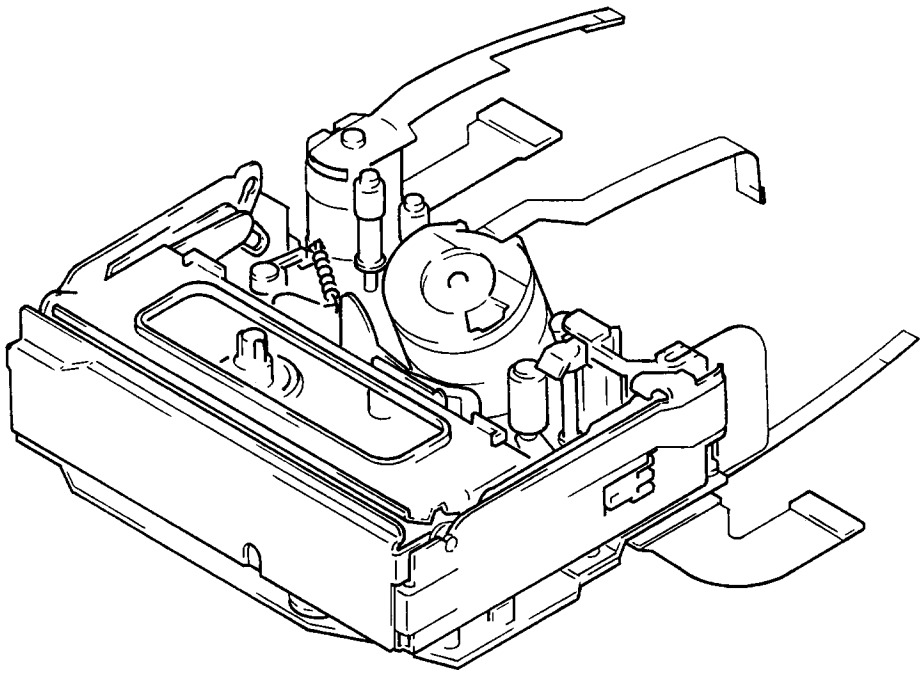
DV MECHANICAL ADJUSTMENT MANUAL I

D MECHANISM

File with the SERVICE MANUAL.

Mini DV Digital Video Cassette



MICROFILM

Digital MECHANISM

SONY®

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1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND MAINTENANCE

PREPARATION

- For removal of the cabinet and boards, refer to "Disassembly" in each service manual.

- When the adjustment and maintenance for the mechanical section are performed, select the condition of mechanical deck using mode selector II for easy use to operate. Refer to "2-5. How to handle the mode selector II" to select the following each [ ] mode.

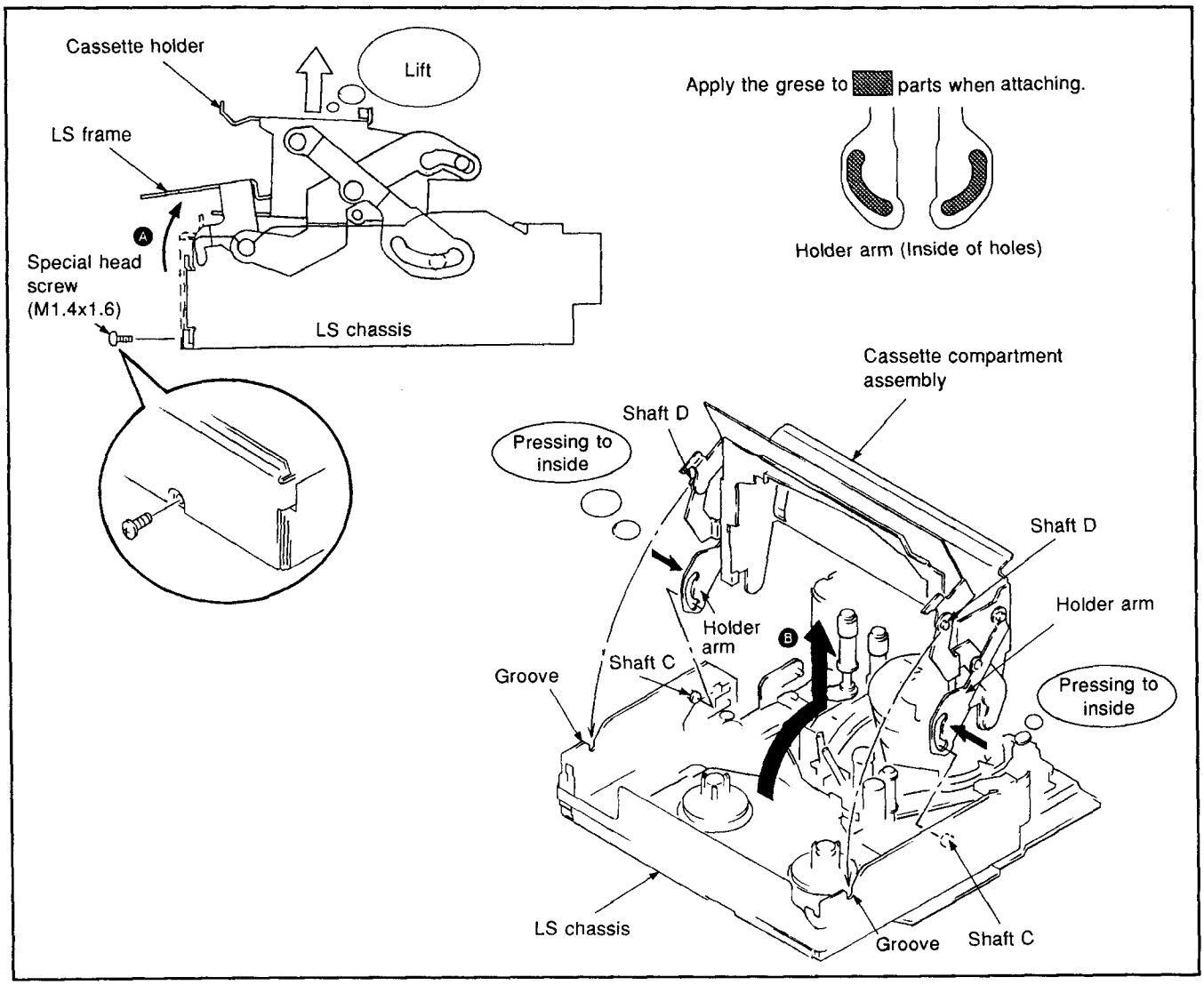
1-1. CASSETTE COMPARTMENT ASSEMBLY

1. Removing

1) Set the [USE—EJ] mode.
2) Remove the screw.
3) Lift the cassette holder, and move the LS frame to the direction of arrow Ⓐ.
4) Lift the cassette compartment assembly to the direction of arrow Ⓑ, then remove pressing the left and right holder arms to inside.

2. Attaching

1) Set the [USE—EJ] mode.
2) Apply the grease (two positions, 1.5 mm dia.) to the cassette compartment assembly, then attach it to the shaft C pressing the holder arms to inside.
   Grease: Floil Grease (SG-941)
3) Pull down the cassette compartment assembly to front, attach the shaft D to a groove of LS chassis, then pull down the LS frame to front.
4) Attach the screw.
   Fixing torque: 0.0588 N • m (0.6 kg • cm)



2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks not only to fully display the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regardless of the length of use.

2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Press a wiping cloth (Ref No. J-2) moistened with cleaning fluid (Ref No. J-1) against the rotary drum assembly gently, and clean it while rotating the upper rotary drum assembly slowly with your finger in the counterclockwise direction.

Note: Do not rotate the motor on power or rotate the upper rotary drum assembly in the clockwise direction with your finger. The head tip will also be damaged if the wiping cloth is moved perpendicularly against it. Therefore, be sure to follow the above instructions when cleaning the rotary drum assembly.

2-2. CLEANING OF TAPE PATH SYSTEM (See Fig. 1.)

1) In the EJECT mode, clean the tape path systems (TG-1, 2, 3, 4, 5, 6, 7, capstan) and the lower drum using a superfine applicator (Ref No. J-3) moistened with cleaning fluid.

Note 1: Make sure that no oil or grease of the link mechanisms sticks to the superfine applicator (Ref No. J-3.)

Note 2: Do not use a applicator moistened with alcohol to the other guide cleaning. But clean the pinch roller using alcohol.

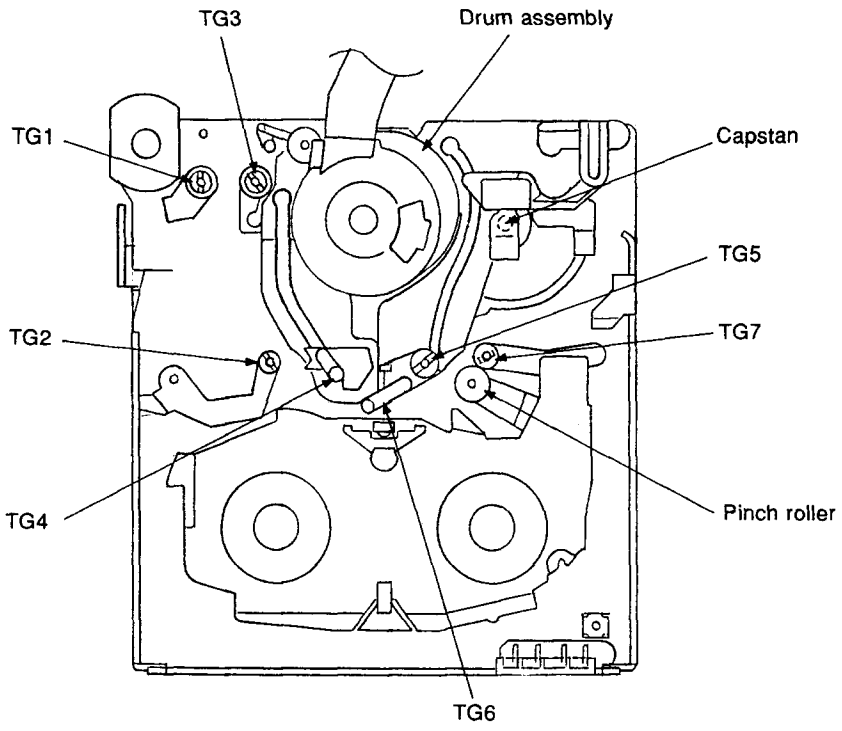


Fig. 1.

2-3. PERIODIC CHECKS

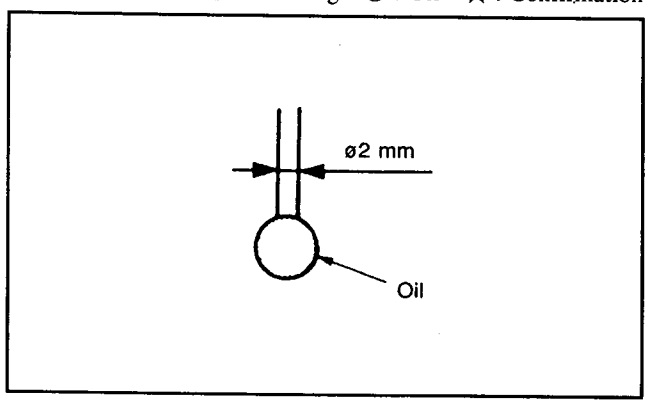
Location of Maintenance and Check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of the oil
	Cleaning and degaussing of rotary drum assembly	○	○	○	○	○	○	○	○	○	○	Be careful of the oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-748-734-01
Driving System	Capstan shaft (Bearing)	—	☆	—	☆	—	☆	—	☆	—	☆	Make sure that no oil gets on the tape path surface.
Driving System	Conversion gear shaft Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
Driving System	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7026-007-A
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
Performance Confirmation	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance Confirmation	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance Confirmation	FWD / RVS } Torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note: When overhauling, refer to the checks above and replace parts.

Note: Oiling

- Be sure to use the specified oil. (If the viscosity of the oil is different, etc., problems may result.)
  Oil: Part No. 7-661-018-18
  (Mitsubishi Diamond Oil Hydrofluid NT-68)
- When lubricating bearings, be sure to use oil free from dust, etc. (If oil containing dusts, etc. is used, bearings may wear out, burn, etc.)
- A drop of oil means the amount on the tip of a 2 mm diameter stick as shown in the Fig 5.
- FLOIL Grease (SG-941): Part No. 7-662-001-39

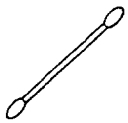
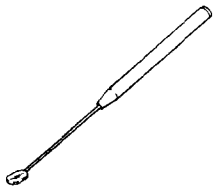
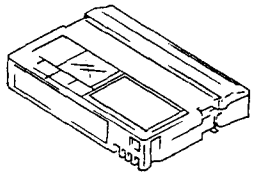
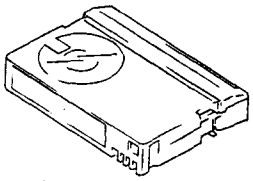
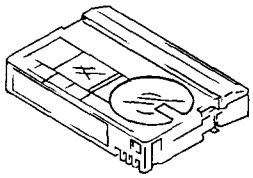
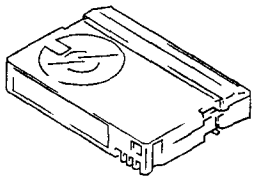
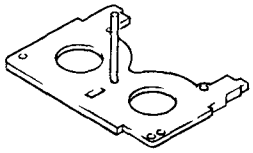
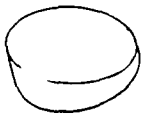
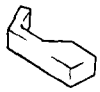
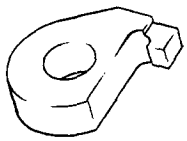
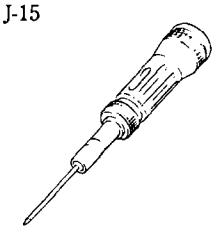
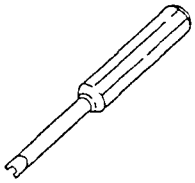
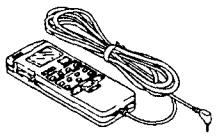
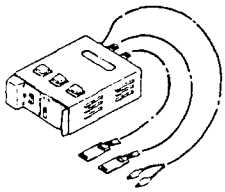
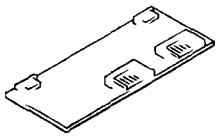
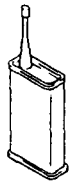
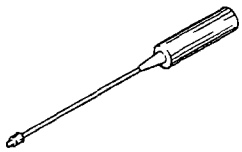


2-4. SERVICE JIGS LIST

Ref. No.	Name	Part No.	Fixtur No.	Usage, Others Application, etc
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Wiping cloth	7-741-900-53		
J-3	Super fine applicator (Made by NIPPON APPLICATOR (P752D))			
J-4	Mirror (Small oval type)	J-6080-840-A	GD-2038	Tape path
J-5	Tracking tape (XH2-1) (NTSC/PAL)	8-967-997-01		Tape path
J-6	RVS torque tape	J-6082-327-A		
J-7	FWD torque (D mechanism) & RVS back tension (E mechanism) tape	J-6082-328-A		
J-8	FWD back tension tape (D/E mechanism)	J-6082-329-A		
J-9	Cassette standerd plate	J-6082-330-A		
J-10	Reel standard plate	J-6082-331-A		
J-11	Dummy drum (D mechnism)	J-6082-332-A		
J-12	TG1 preset base (D mechanism)	J-6082-333-A		
J-13	TG5 preset base (D mechanism)	J-6082-334-A		
J-14	Washer fixture ø0.8	J-6082-233-A		
J-15	Torque driver	J-9049-330-A		
J-16	Screwdriver for tape path	J-6082-026-A		For adjusting tape guide
J-17	Adjusting remote commander (RM-95 remodeled partly) Note1	J-6082-053-B		
J-18	Mode selector II	J-6082-282-A		For all models
J-19	Mode selector II change connctor board	J-6082-335-A		
J-20	Screw lock G (1401B)	7-432-114-11		
J-21	FWD/BACK Tension adjustment driver	J-6082-187-A		For adjusting FWD position and FWD back tension

Other equipment used
• Oscilloscope

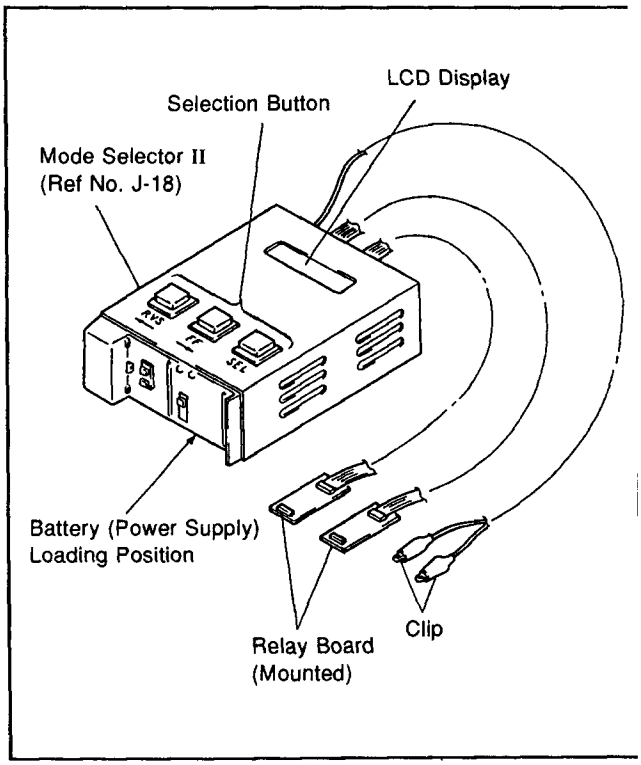
Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replase with the new micro processor (8-759-148-35).

J-1	J-2	J-3 	J-4 	J-5 
J-6 	J-7 	J-8 	J-9 	J-10
J-11 	J-12 	J-13 	J-14	J-15 
J-16 	J-17 	J-18 	J-19 	J-20 
J-21 				

2-5. USE OF MODE SELECTOR II

2-5-1. Outline

This unit is a mechanism drive tool which supplements the maintenance of each mechanism deck. Its functions are described below.



1. Manual test

A mode which drives the motor only while the switch is ON. It enables the operator to control the motor as desired.

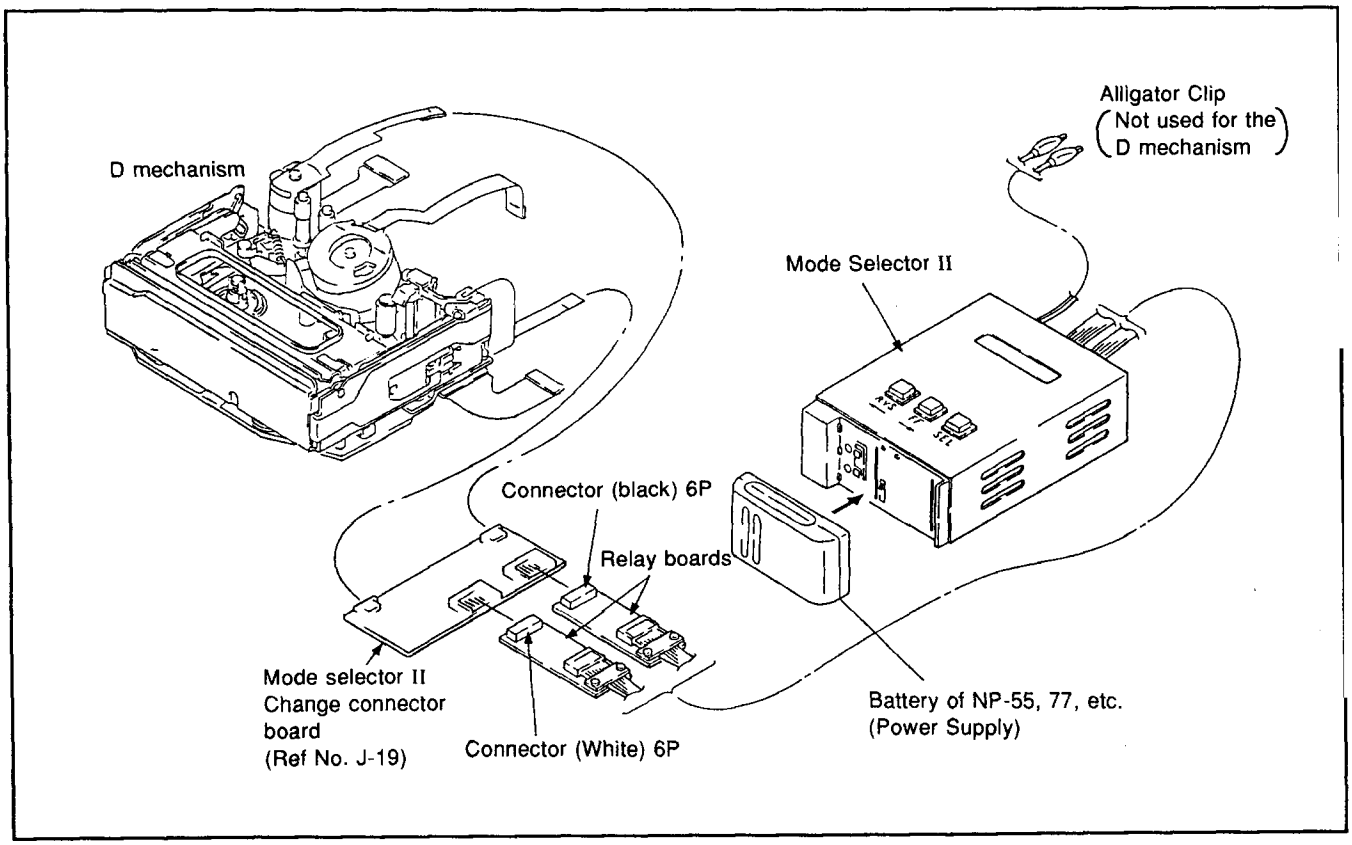
2. Step test

A mode which drives the motor until the current condition detected by the sensor changes to another condition. It enables the movements made by the motor in each operation to be controlled while being checked.

3. Auto test

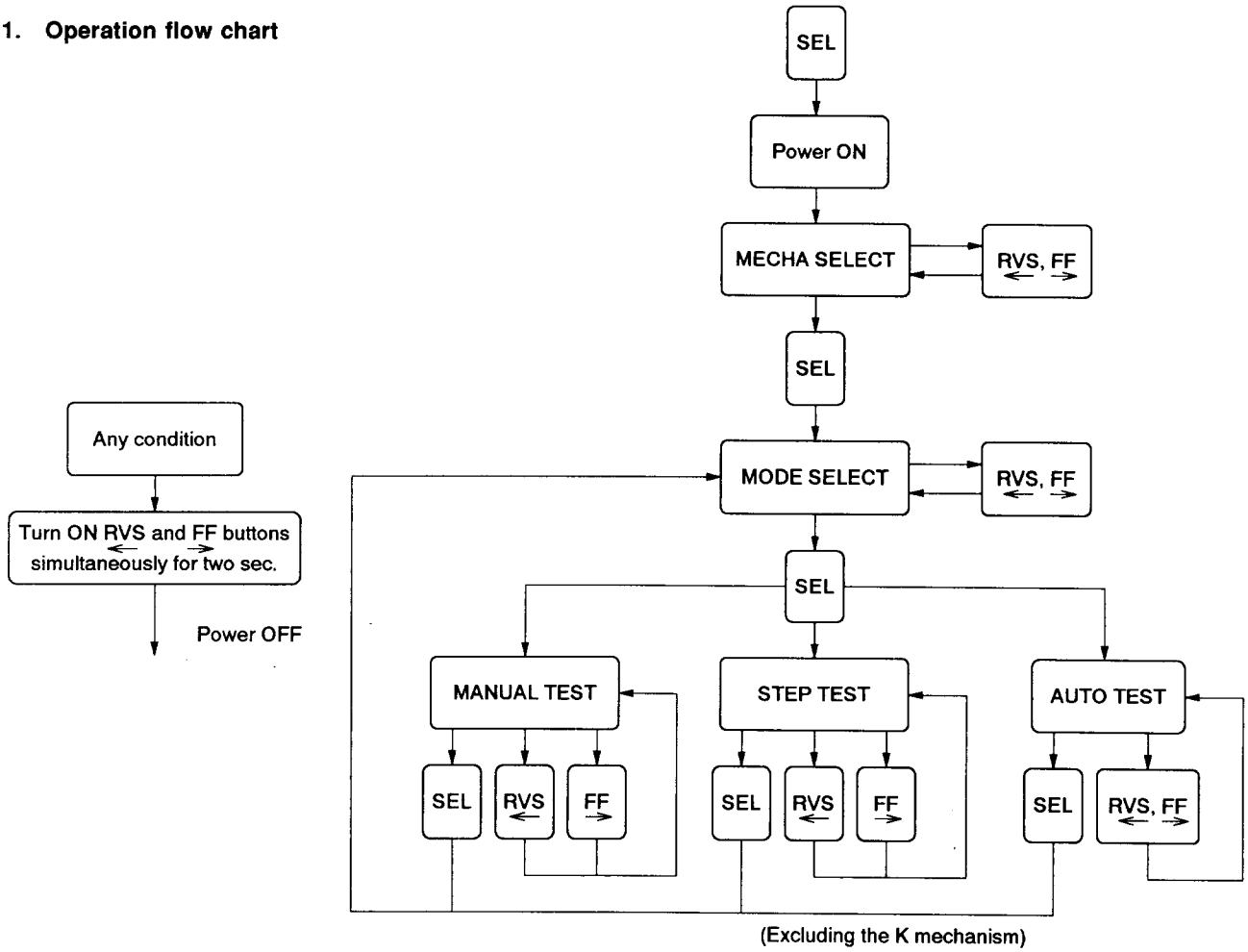
A mode that checks if the mechanism operates normally according to the condition shift table recorded in the unit for each mechanism deck. All the conditions of the decks are checked through a series of operations.
An error message is displayed if incorrect shifts and conditions are detected and operations are stopped.

Mode Selector II (J-6082-282-A) Connection



2-5-2. Operation

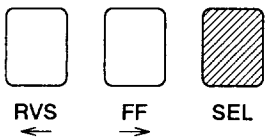
1. Operation flow chart



(Excluding the K mechanism)

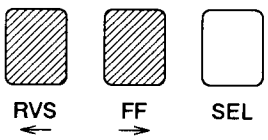
2. Turning ON the mode selector II

To turn ON the power supply, turn on the SEL button.



3. Turning OFF the mode selector II

To turn OFF the power supply, turn on the RVS and FF buttons simultaneously for more two seconds.



4. Mechanism selection

Immediately after the power supply has been turned on, "MECHA SELECT" will be displayed on the LCD. Select the desired mechanism using the RVS and FF buttons, and press the SEL button to complete the selection. (Fig. I shows the D mechanism.)

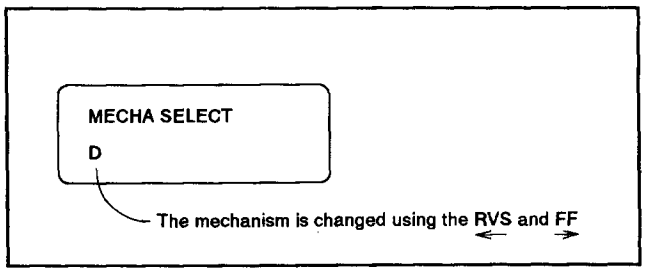


Fig. I

5. Mode selection

Select the test-"MANUAL", "STEP", and "AUTO"- to be executed.
Select the desired mode on the screen using the RVS and FF buttons, and press the SEL button to complete the selection.

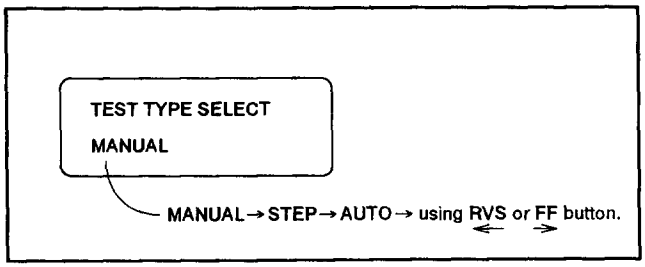


Fig. II

6. Manual test

A mode that drives the motor only when the RVS or FF button is pressed.

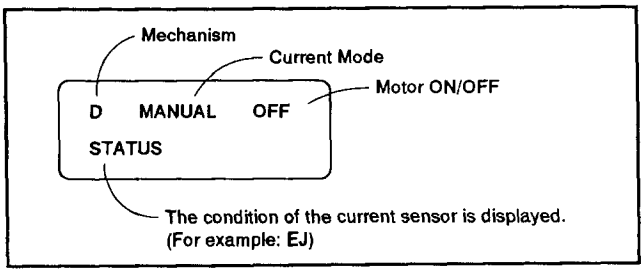


Fig. III

7. Step test

A mode that drives the motor until the direction of motor operations is set using the RVS and FF buttons and the current condition is changed.

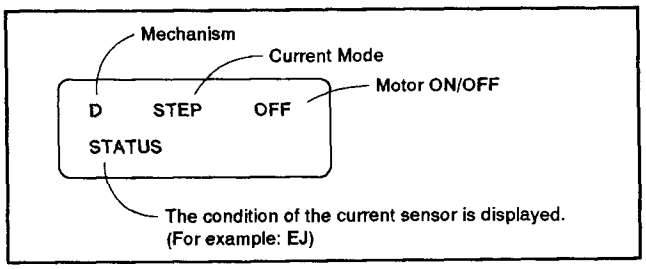


Fig. IV

8. Auto test

Each mechanism deck is checked for its recorded operation sequence. The check is executed by comparing the sensor signals generated in the operation sequence with the recorded operation sequence.
The same operation is carried out when the RVS or FF button is turned on.

Note: Sometimes the AUTO TEST spoils sequence due to a small range of [S. OFF], but this is not a D mechanical trouble.

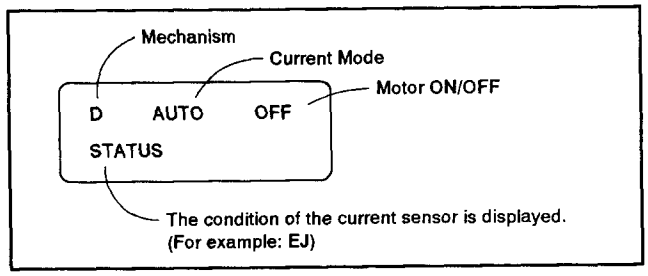


Fig. V

Mechanism condition (position) shifting order

After selecting the mechanism, select one mode from the two test modes, excluding the AUTO test. Then press the RVS or FF button and specify the mechanism condition (position). (Displayed at the STATUS area)
EJ↔USE↔S. OFF↔D. ON↔LE↔STOP↔FF↔R/P↔RVS

Code A	B	C	D	MD name	D mechanism
1	0	1	0	1	EJ
1	1	1	0	2	USE
1	1	0	0	3	S. OFF
1	1	0	1	4	D. ON
1	0	0	1	5	LE
0	1	0	1	6	STOP
0	1	1	1	7	FF
1	0	1	1	8	R/P
0	0	1	1	9	RVS

9. Battery alarm display

When the battery voltage (power supply unit of the unit) drops, this alarm is displayed, no operations can be carried out and the battery must be changed.

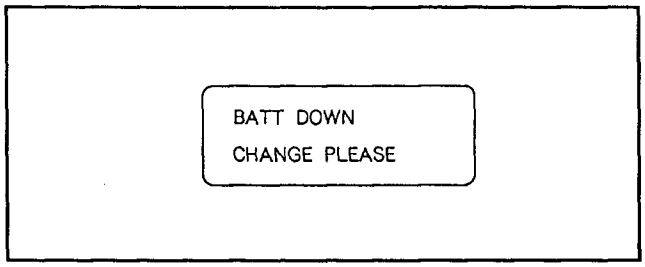


Fig. VI

3. MECHANISM SECTION CHECKS, ADJUSTMENTS AND REPLACEMENTS

3-1. DRUM ASSEMBLY (MOTOR FPC ASSEMBLY AND ELASTIC CONNECTORS)

1. Removing

<Motor FPC assembly and elastic connectors>

- Remove the two screws to remove the motor FPC assembly and elastic connectors.

<Drum assembly>

- Remove the three of drum fitting screw assembly to remove the drum assembly.

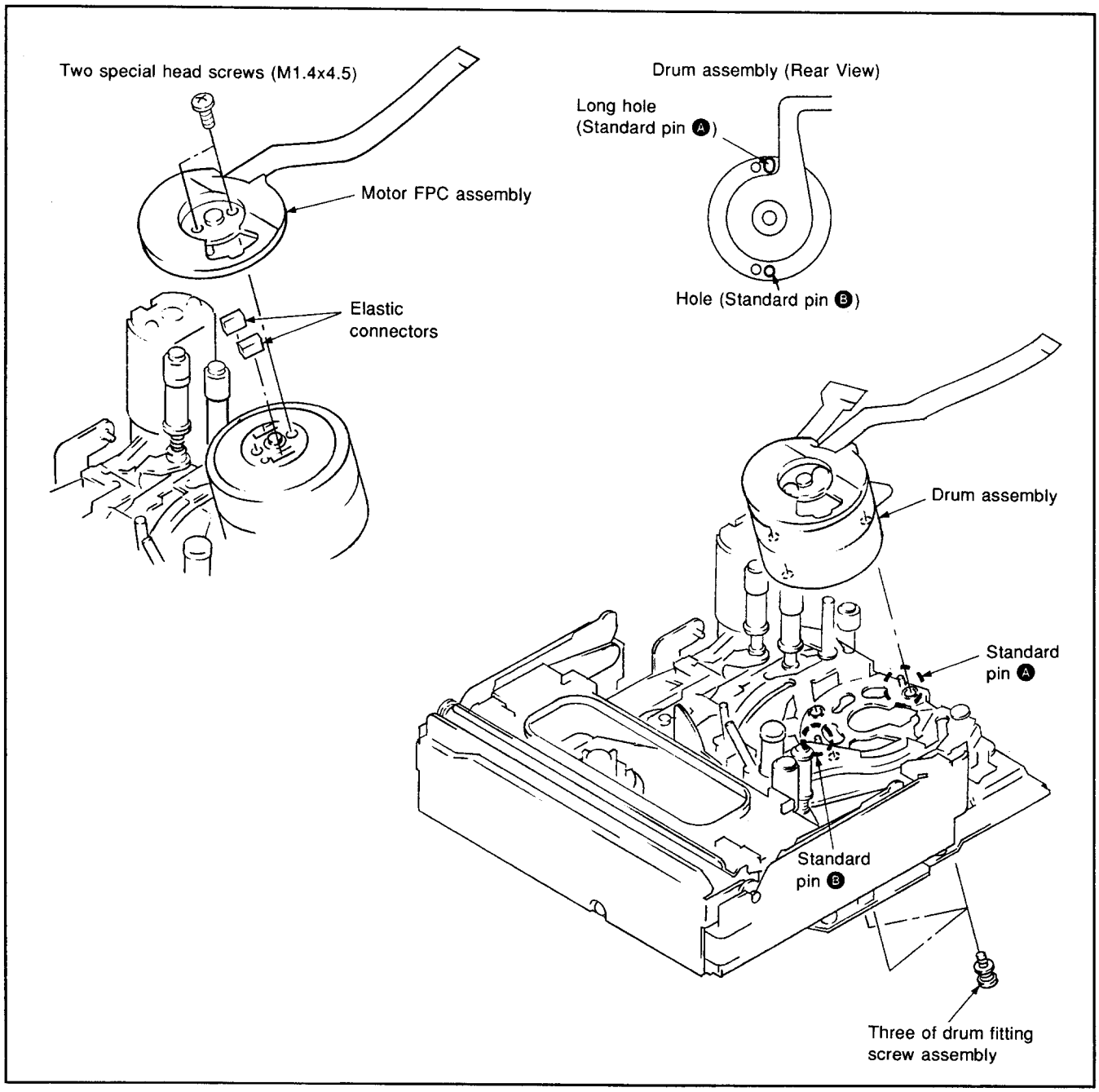
2. Attaching

<Motor FPC assembly and elastic connectors>

1) Attach the elastic connectors.
2) Attach the motor FPC assembly with two screws. (Pay attention to adjust the position of holes.)
   Fixing torque: 0.0490 N • m (0.5 kg • cm)

<Drum assembly>

1) Attach the holes on the rear side of drum assembly to standard pin. (Pay attention to the direction of the drum.)
2) Attach the three of drum fitting screw assembly.
   Fixing torque: 0.0392 N • m (0.4 kg • cm)
3) Refer to 2-1., perform the cleaning of drum assembly.
4) Carry out the tape path adjustment. (Refer to "4. TAPE PATH ADJUSTMENT".)



3-2. HC ASSEMBLY (HC ROLLER ASSEMBLY, HC SLIDE ASSEMBLY AND HC ARM ASSEMBLY)

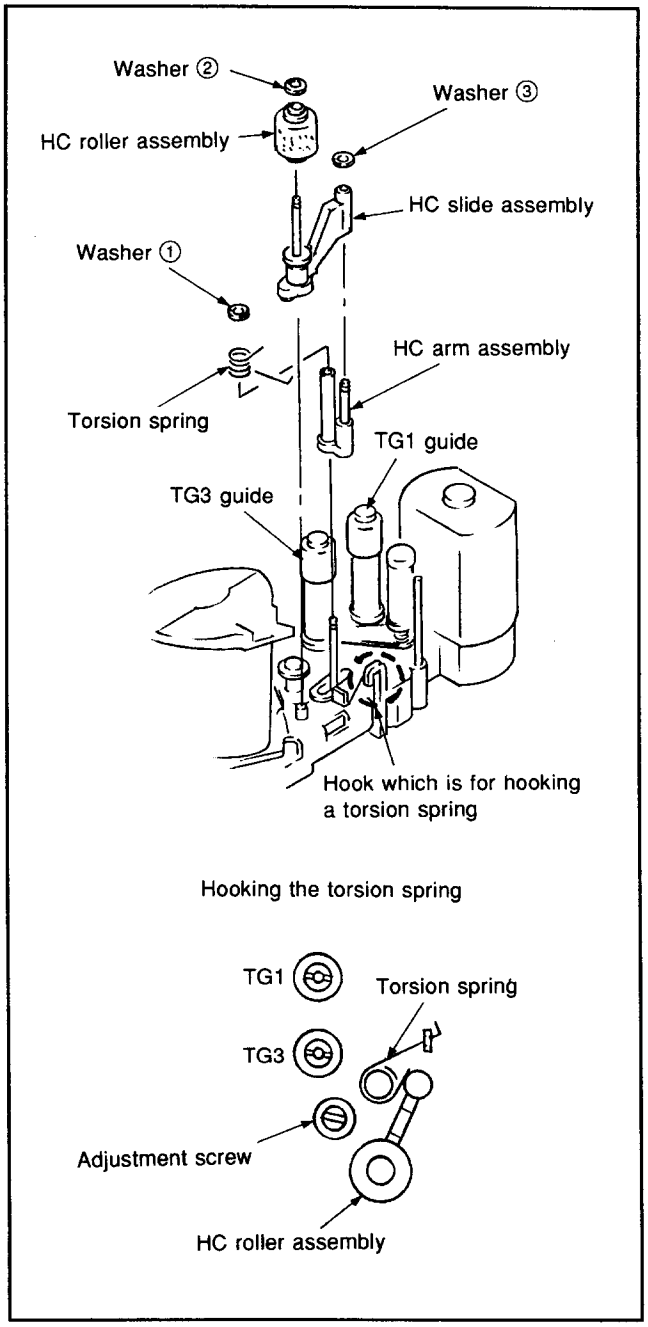
1. Removing

1) Remove the washer ①, then remove the HC arm assembly and torsion spring.
2) Remove the washer ② and remove the HC roller assembly.
3) Remove the washer ③ and remove the HC slide assembly.

2. Attaching

1) Attach the HC slide assembly to the HC arm assembly with the washer ③.
2) Attach the HC roller assembly to the HC slide assembly with the washer ②.
3) Attach the torsion spring and HC assembly with the washer ①.

Note: Pay attention to attach the torsion spring.



3-3. TG1 GUIDE

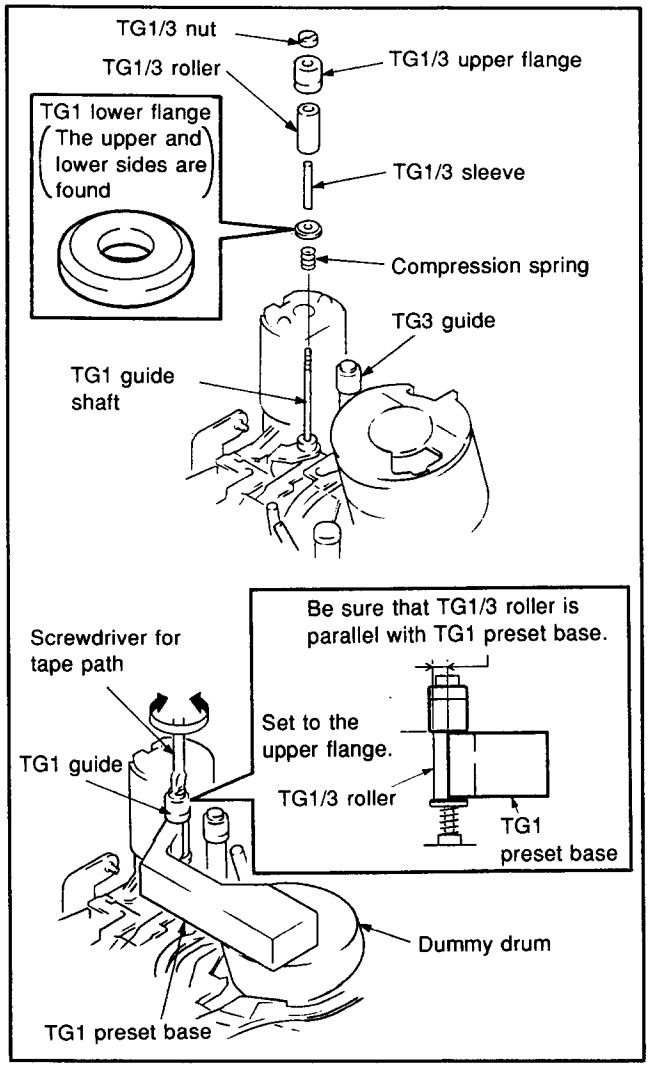
1. Removing

- Remove the TG1/3 nut with a screwdriver for tape path (Ref No. J-16), then remove in the order of TG1/3 upper flange, TG1/3 roller, TG1/3 sleeve, TG1 lower flange and compression spring.

2. Attaching

1) Attach in the order of compression spring TG1 lower flange, TG1/3 sleeve, TG1/3 roller, TG1/3 upper flange and TG1/3 nut.
2) Refer to 3-1. to remove the drum assembly and attach the dummy drum (Ref No. J-11).
3) Put the TG1 preset base (Ref No. J-12) on the dummy drum, adjust the TG1/3 nut with a screwdriver for tape path (Ref No. J-16) to meet the height of TG1/3 upper flange and a jig.
4) Refer to 3-1. and attach the drum assembly after removing each jig.
5) Refer to 2-2. clean the TG1 guide.
6) Adjust the tape path. (Refer to "4. TAPE PATH ADJUSTMENT".)

Note: If the TG1 guide shaft is damaged, it will be necessary to replace the mechanical chassis block assembly. (Refer to "5. EXPLODED VIEWS".)



3-4. TG3 GUIDE

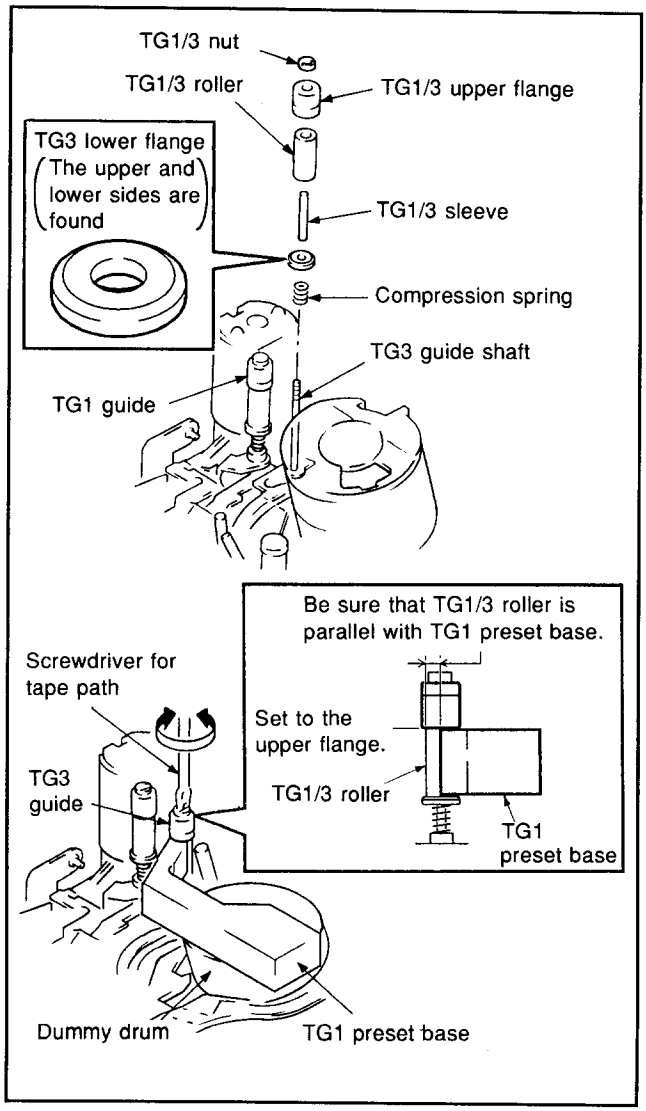
1. Removing

- Remove the TG1/3 nut with a screwdriver for tape path (Ref No.J-16), then remove in the order of TG1/3 upper flange, TG1/3 roller, TG1/3 sleeve, TG3 lower flange and compression spring.

2. Attaching

1) Attach in the order of compression spring, TG3 lower flange, TG1/3 sleeve, TG1/3 roller, TG1/3 upper flange and TG1/3 nut.
2) Refer to 3-1. to remove the drum assembly and attach the dummy drum (Ref No. J-11).
3) Put the TG1 preset base (Ref No.J-12) on the dummy drum, adjust the TG1/3 nut with a screwdriver for tape path (Ref No. J-16) to meet the TG1/3 upper flange and a jig.
4) Refer to 3-1. to attach the drum assembly after removing each jig.
5) Refer to 2-2. to clean the TG3 guide.
6) Adjust the tape path.
   (Refer to "4. TAPE PATH ADJUSTMENT".)

Note: If the TG3 guide shaft is damaged, it will be necessary to replace the mechanical chassis block assembly.
(Refer to "5. EXPLODED VIEWS".)



3-5. TG7 GUIDE

1. Removing

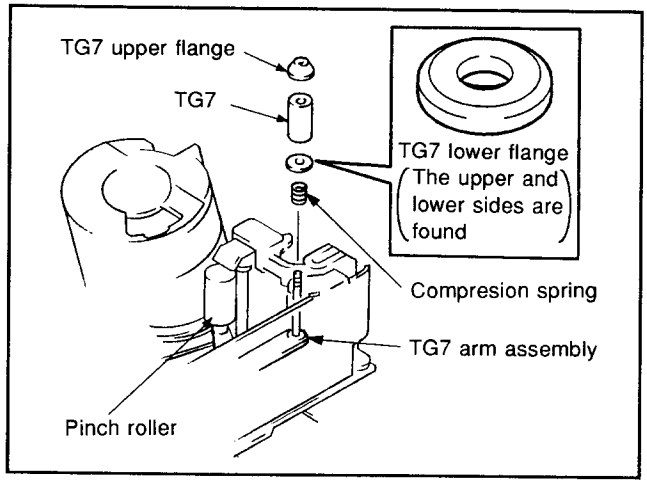
- Remove the TG7 upper flange with a screwdriver for tape path (Ref No. J-16), then remove in the order of TG7, TG7 lower flange and compression spring.

2. Attaching

1) Attach in the order of compression spring, TG7 lower flange, TG7 and TG7 upper flange.

Note: Fix temporarily not to come out the TG7 guide shaft from the TG7 upper flange.

2) Refer to 2-2. to clean the TG7 guide.
3) Adjust the tape path.
   (Refer to "4. TAPE PATH ADJUSTMENT".)



3-6. S POSITIONING AND T POSITIONING

1. Removing

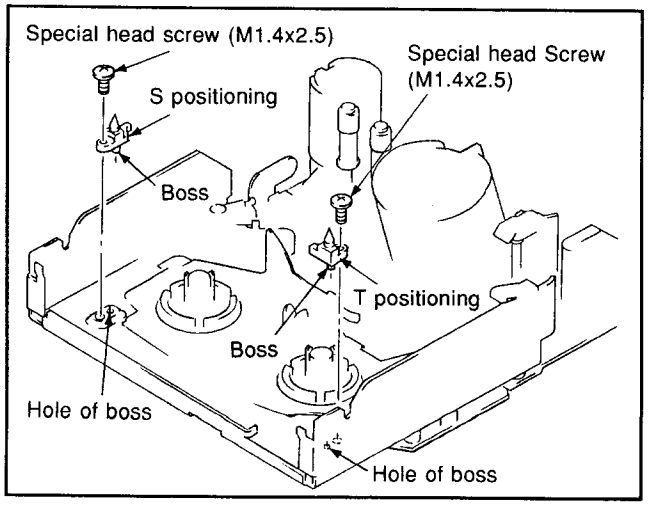
1) Refer to 1-1. to lift the cassette compartment assembly.
2) Remove each screw, then remove the S positioning and T positioning.

2. Attaching

1) Attach the S positioning and T positioning with screws.
   Fixing torque: 0.0588 N • m (0.6 kg • cm)

Note: Pay attention to adjust the position of each positioning and side S or T.

2) Refer to 1-1. to attach the cassette compartment assembly.



3-7. LOCK LEVER AND SLIDER FOLLOWER

1. Removing

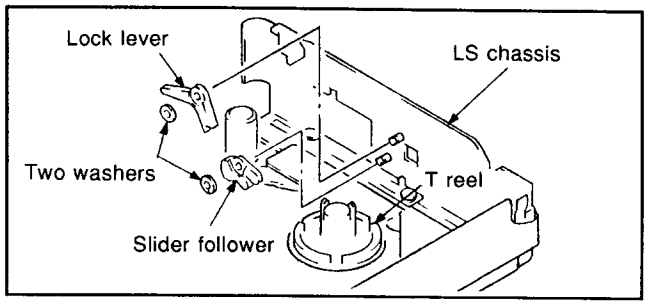
1) Refer to 1-1. to lift the cassette compartment assembly.
2) Remove each washer, then remove in the order of lock lever and slider follower.

2. Attaching

1) Attach in order of slider follower and lock lever with washers.

Note: Pay attention to the direction and attaching position of lock lever and slider follower.

2) Refer to 1-1. to attach the cassette compartment assembly.



3-8. LM MOTOR ASSEMBLY

1. Removing

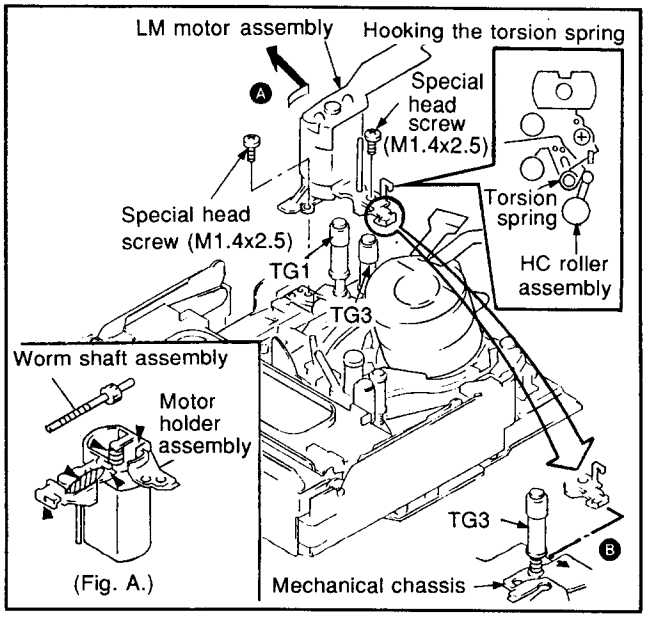
1) Set the [LE—STOP] mode.
2) Remove the two of screws to remove the LM motor assembly in the direction of arrow Ⓐ.

2. Attaching

1) Set the [LE—STOP] mode.
2) Attach the LM motor assembly with the two of screws in the direction of arrow Ⓑ.
   Fixing torque: 0.0588 N • m (0.6 kg • cm)
3) Hook the torsion spring of HC roller assembly.

<Note for replacement of the warm shaft assembly>

- Apply the grease which is applied to the warm shaft assembly before replacement to ► (Fig. A) of the motor holder assembly.



3-9. CAPSTAN MOTOR

There is an axis compensating spacer between the capstan motor and mechanical chassis for this mechanical deck. It is necessary to remember the attached position (one of ⓐ or ⓑ) and thickness (normal: 100μm) when removing the capstan motor because the set has its own attaching position and thickness.

1. Removing

1) Set the [D. ON—EJ] mode.
2) Remove the screw ① to remove the FPC holder.
3) Remove the two of screw ② to remove the capstan motor.

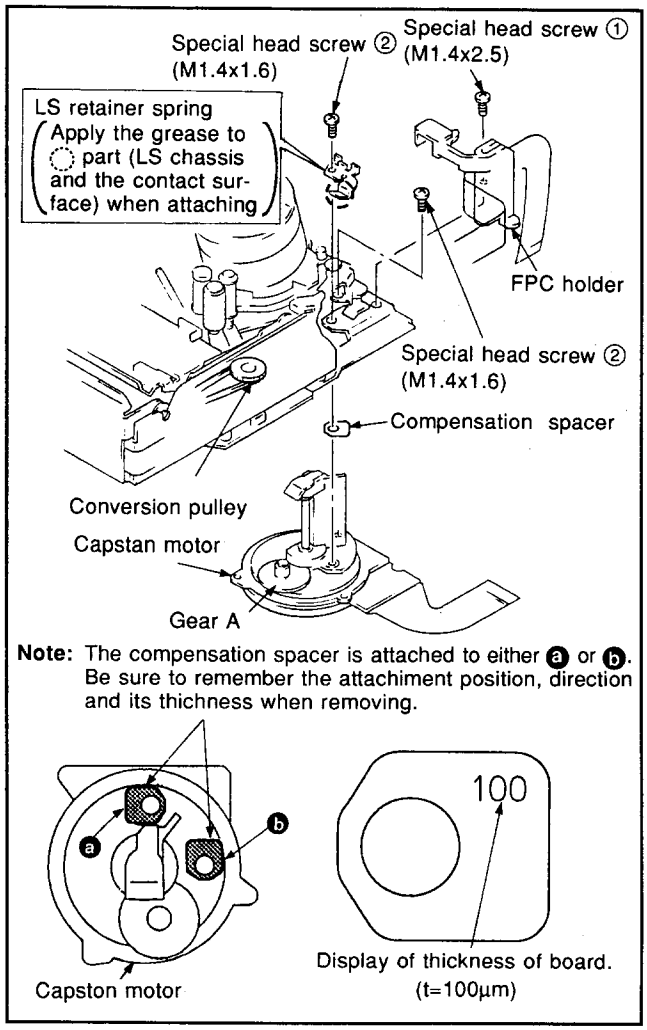
Note: Not to lose the compensating spacer. Be sure to remember the attaching position and thickness.

2. Attaching

1) Set the [D. ON—EJ] mode.
2) Put the compensating spacer on the capstan motor.

Note: Be sure to check that it is satisfied the same condition with when removing.

3) Engage the gear A and conversion pulley.
4) Apply the grease (1.5 mm dia.) to the LS retainer spring.
   Grease: Floil Grease (SG-941)
5) Attach the capstan motor with two of screw ②.
   Fixing torque: 0.0981 N • m (1 kg • cm)
6) Attach the FPC holder with a screw ①.
   Fixing torque: 0.0588 N • m (0.6 kg • cm)



Note: The compensation spacer is attached to either ⓐ or ⓑ. Be sure to remember the attachiment position, direction and its thichness when removing.

3-10. LED BASE ASSEMBLY

1. Removing

1) Refer to 1-1. to lift the cassette compartment assembly.
2) Remove the LED holder, then remove the LED (FP-242).
3) Remove the screw, then remove the LED base assembly in the direction of arrow.

2. Attaching

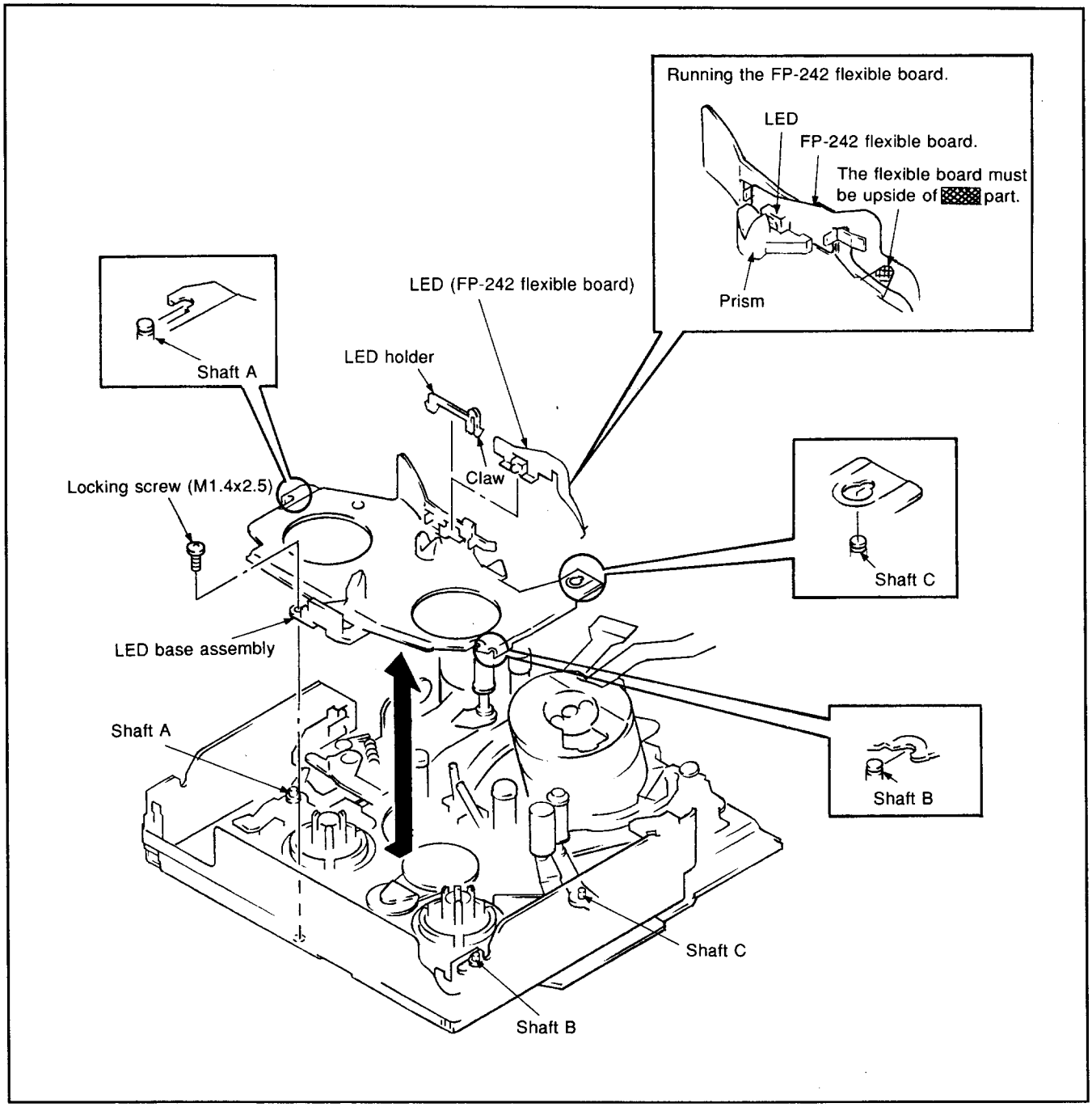
1) Hook the three notches of LED base assembly to each slit on the shaft A, B and C, so that the LED (FP-242) is not inserted.

Note: Pay attention to your fingerprints and scratch.

2) Attach the screw and apply the screw lock (Ref No. J-20).
   Fixing torque: 0.0588 N • m (0.6 kg • cm)
3) Put the LED (FP-242) in the space of prism, then remove the LED holder.

Note: Pay attention to pull around the FP-242.

4) Refer to 1-1. to attach the cassette compartment assembly.



3-11. TG7 ARM ASSEMBLY

1. Removing

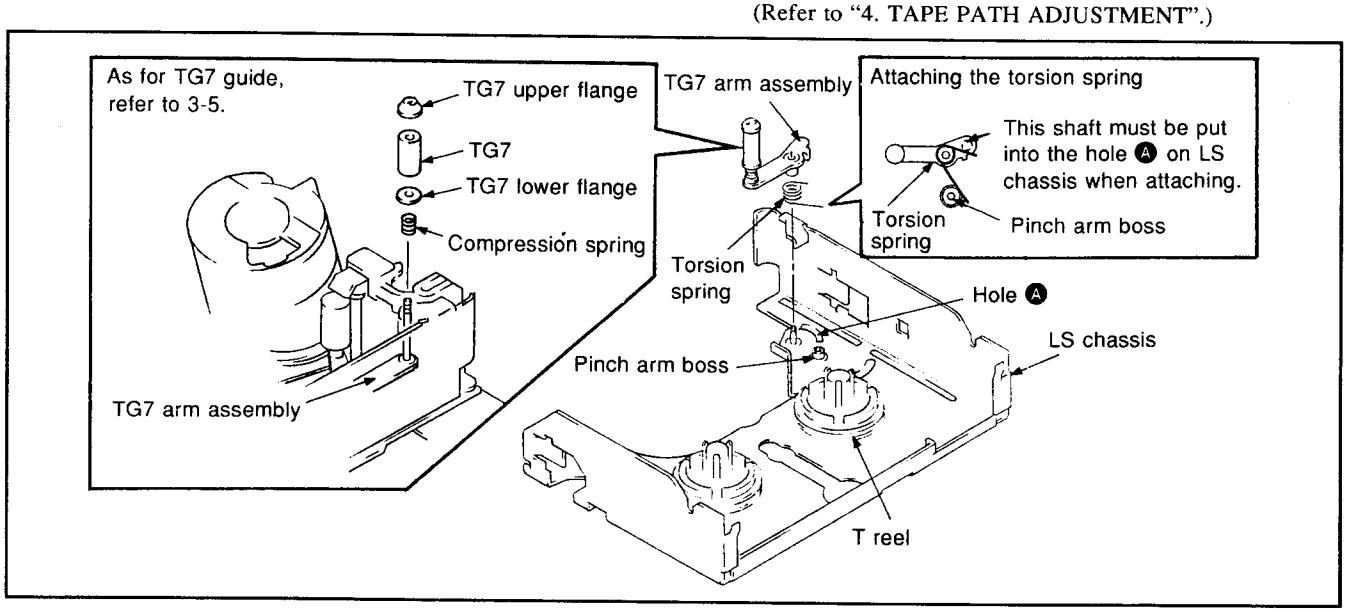
1) Refer to 1-1. to remove the cassette compartment assembly.
2) Refer to 3-10. to remove the LED base assembly.
3) Set the [EJ] mode, and remove in order of TG7 arm assembly and torsion spring.
4) Refer to 3-5. to remove the TG7 guide.

2. Attaching

1) Set the [EJ] mode.
2) Refer to 3-5. to attach the TG7 guide.
3) Attach in the order of torsion spring and TG7 arm assembly.

Note: Pay attention to attach the torsion spring.

4) Refer to 3-10. to attach the LED base assembly.
5) Refer to 1-1. to attach the cassette compartment assembly.
6) Refer to 2-2. to clean the TG7 guide.
7) Adjust the tape path.
   (Refer to "4. TAPE PATH ADJUSTMENT".)



3-12. PINCH ARM ASSEMBLY

Note: When the pinch arm assembly is replaced, be sure to replace the extension spring together.

1. Removing

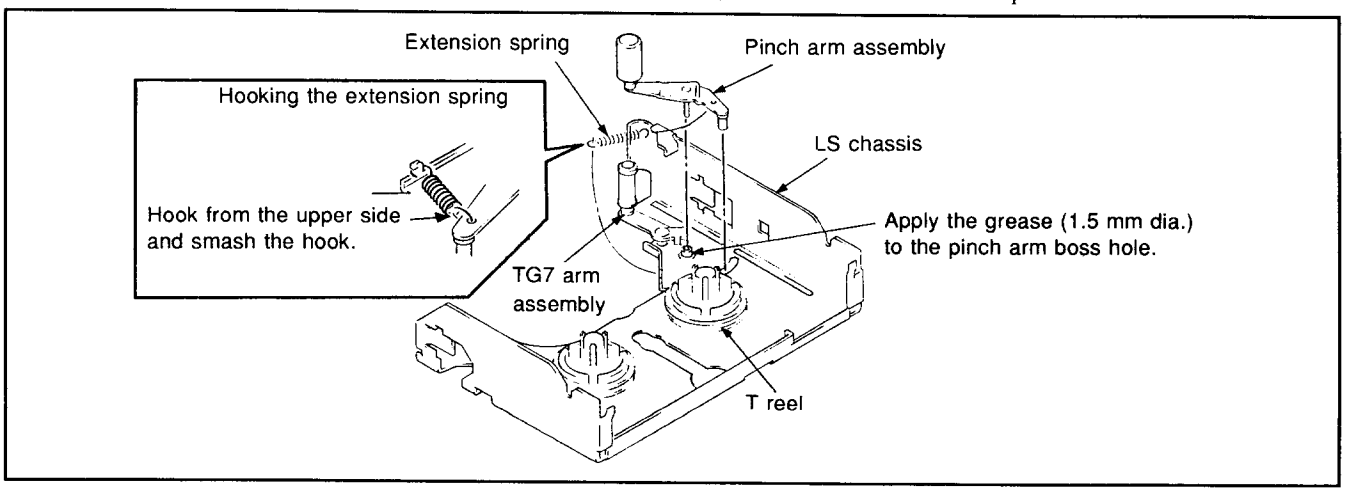
1) Refer to 1-1. to remove the cassette compartment assembly.
2) Refer to 3-10. to remove the LED base assembly.
3) Set the [FF—RVS] mode, remove the extension spring from the side of LS chassis, then remove the pinch arm assembly.

2. Attaching

1) Set the [FF—RVS] mode, apply the grease (1.5 mm dia.) to the pinch arm boss hole, attach the pinch arm assembly and hook the extension spring.
   Grease: Floil Grease (SG-941)

Note: There is a specified direction of the spring hook.

2) Refer to 3-10. to attach the LED base assembly.
3) Refer to 1-1. to attach the cassette compartment assembly.
4) Refer to 2-2. to clean the pinch roller.


Extension spring
Pinch arm assembly
Hooking the extension spring
LS chassis
Hook from the upper side and smash the hook.
Apply the grease (1.5 mm dia.) to the pinch arm boss hole.
TG7 arm assembly
T reel

3-13. T HARD BREAK, S BREAK ARM AND S HARD

1. Removing

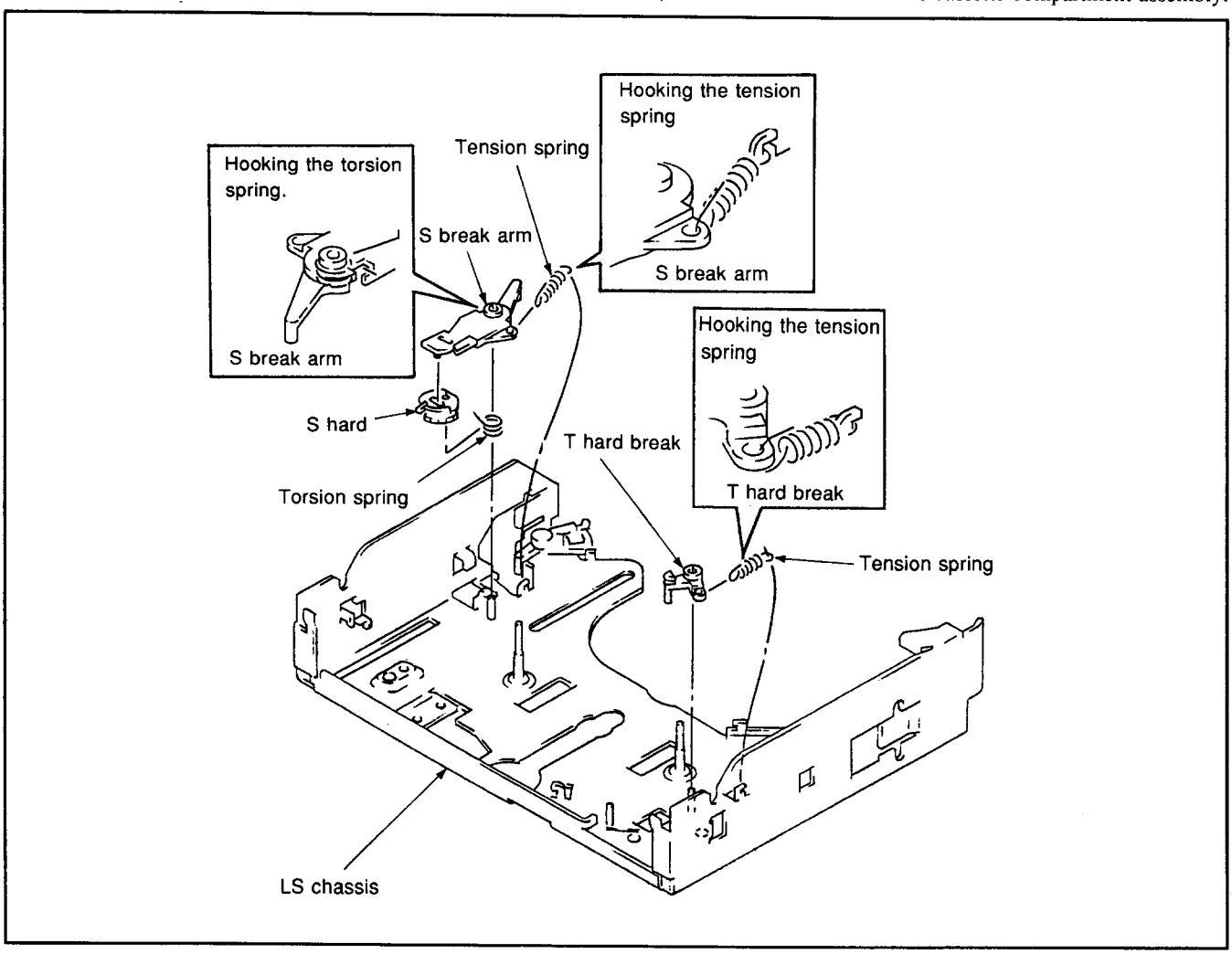
1) Refer to 1-1. to lift the cassette compartment assembly.
2) Refer to 3-10. to remove the LED base assembly.
3) Remove the tension spring from the side of LS chassis, then remove the T hard break, S break arm, torsion spring and S hard.

2. Attaching

1) Attach the S hard and torsion spring to the S break arm.

Note: Pay attention to attach the spring and S hard, and the hooking position of spring.

2) Hook each tension spring to the T hard break and S break arm, then attach each break to the LS chassis.
3) Hook the tension spring to the side of LS chassis.
4) Refer to 3-12. to attach the LED base assembly.
5) Refer to 1-1. to attach the cassette compartment assembly.



3-14. RVS BREAK AND LS CAM PLATE

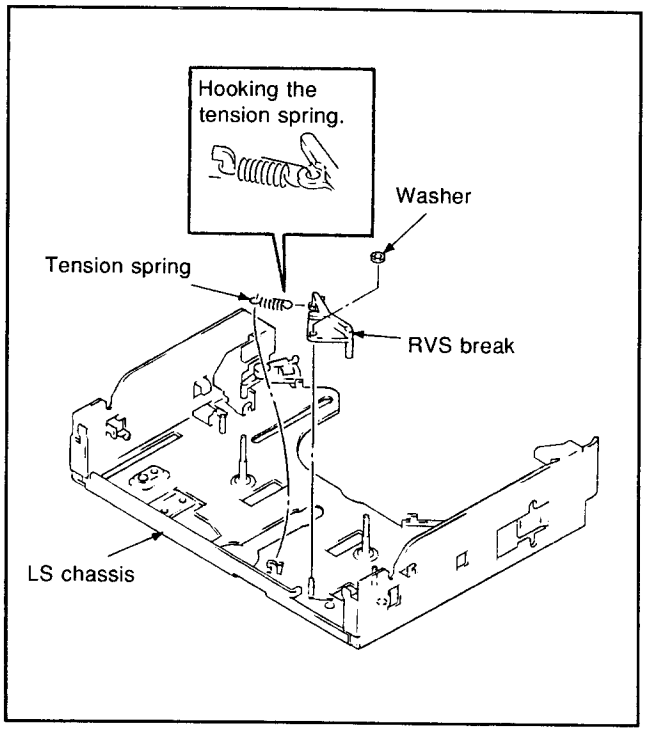
[RVS BREAK]

1. Removing

1) Refer to 1-1. to lift the cassette compartment assembly.
2) Refer to 3-10. to remove the LED base assembly.
3) After the washer is removed, remove the tension spring from the side of LS chassis, then remove the RVS break.

2. Attaching

1) Hook the tension spring to RVS break.
   (There is a specified spring hook direction.)
2) Attach the RVS break with a washer to the LS chassis and hook the tension spring.
3) Refer to 3-10. to attach the LED base assembly.
4) Refer to 1-1. to attach the cassette compartment assembly.



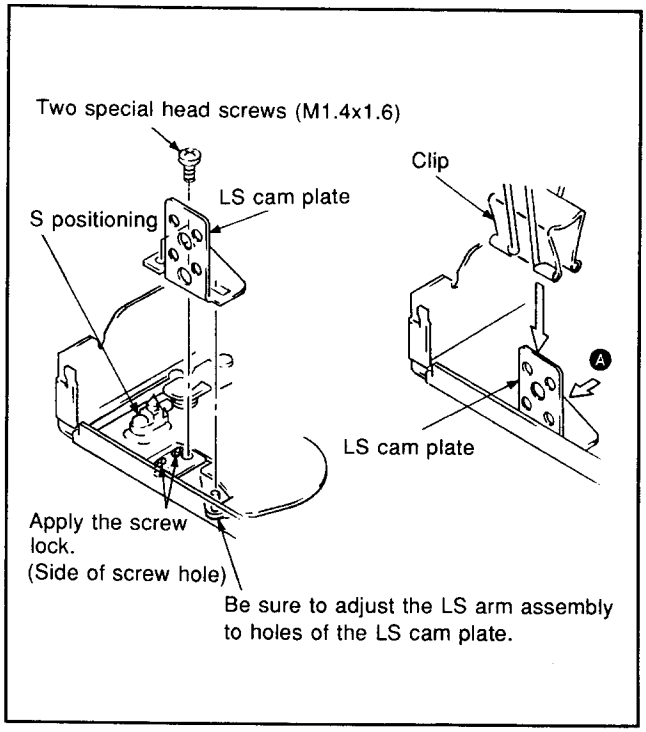
[LS CAM PLATE]

1. Removing

1) Refer to 1-1. to lift the cassette compartment assembly.
2) Refer to 3-10. to remove the LED base assembly.
3) Remove the two screws and remove the LS cam plate.

2. Attaching

1) Apply the lock screw (Ref No. J-20) (two positions), then fix the LS cam plate temporarily with two screws.
2) Set the [RP] mode, loosen the two screws, press in the direction of arrow Ⓐ, clasp the LS cam plate and LS chassis with a clip etc., and fasten the screws tightly.
   Fixing torque: 0.0981 N • m (1 kg • cm)
3) Refer to 3-10. to attach the LED base assembly.
4) Refer to 1-1. to attach the cassette compartment assembly.


Two special head screws (M1.4x1.6)
Clip
LS cam plate
S positioning
Ⓐ
LS cam plate
Apply the screw lock.
(Side of screw hole)
Be sure to adjust the LS arm assembly to holes of the LS cam plate.

3-15. TG7 ARM BLOCK ASSEMBLY AND TENSION REGULATOR BAND ASSEMBLY

When the TG7 arm block assembly is replaced, be sure to replace the extension spring together.

1. Removing

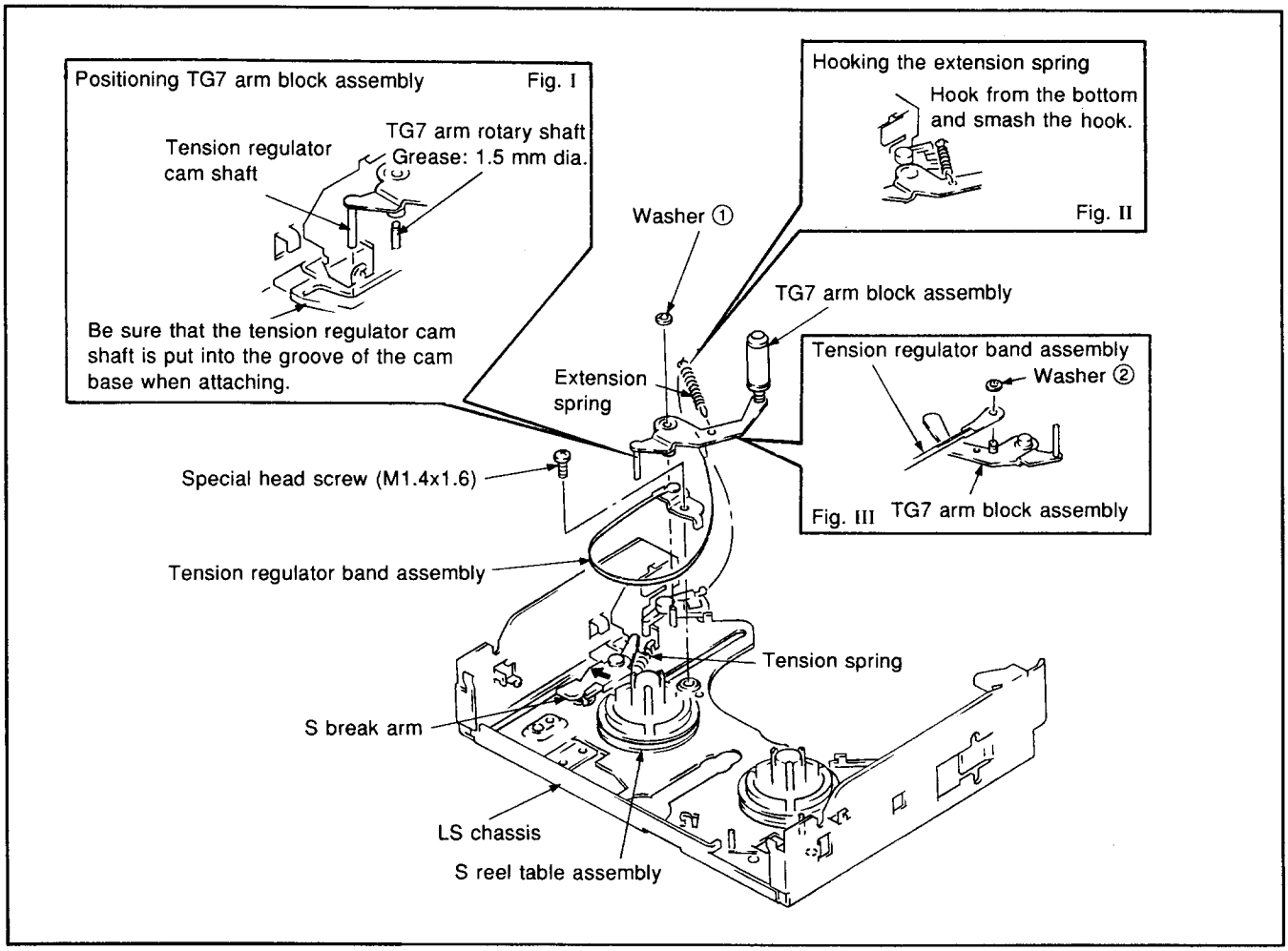
1) Refer to 1-1 to remove the cassette compartment assembly.
2) Refer to 3-10. to remove the LED base assembly.
3) Set the [D. ON] mode and check that the tension regulator band assembly is loose.
4) Remove the tension spring of S break arm (LS chassis side only), and keep away in the direction of arrow.
5) Remove the extension spring and a screw from the side of LS chassis, then remove the tension regulator band assembly.
6) Remove the washer ①, and remove the TG7 arm block assembly with the tension regulator band assembly together.
7) Remove the washer ②, and remove the tension regulator band assembly.
   (Refer to the figure III.)

2. Attaching

1) Attach the tension regulator band assembly to the TG7 arm block assembly with the washer ②. And attach the extension spring to the arm block. (Refer to the figure II.)
   Grease: Floil Grease (SG-941)

Note: There is a specified direction of the spring hook.

2) Set the [D. ON] mode, apply the grease (1.5 mm dia.) to the TG7 arm rotary shaft, then attach the TG7 arm block assembly to fit the groove of cam base and hook the extension spring. (Refer to the figure I.)
   Grease: Floil Grease (SG-941)
3) Attach the washer ①.
4) Check the S break arm is slid in the direction of arrow, wind the tension regulator band to the S reel table assembly, then fix the tension regulator band assembly temporarily putting it to the side of S reel table assembly.
5) Hook the tension spring of S break arm to the LS chassis.
6) Refer to 3-10. to attach the LED base assembly.
7) Refer to 1-1. to attach the cassette compartment assembly.
8) Refer to 3-16. to adjust the position of FWD.
9) Refer to 3-17. to adjust the FWD back tension.
10) Refer to 3-18. to check the (RVS) torque on the reel table.


Positioning TG7 arm block assembly
Fig. I
Tension regulator cam shaft
TG7 arm rotary shaft
Grease: 1.5 mm dia.
Be sure that the tension regulator cam shaft is put into the groove of the cam base when attaching.
Hooking the extension spring
Hook from the bottom and smash the hook.
Fig. II
Washer ①
TG7 arm block assembly
Extension spring
Tension regulator band assembly
Washer ②
Fig. III TG7 arm block assembly
Special head screw (M1.4x1.6)
Tension regulator band assembly
Tension spring
S break arm
LS chassis
S reel table assembly

3-16. FWD POSITION ADJUSTMENT

Adjust the following items for replacement of the TG7 arm, tension regulator band, S reel table and others or removing parts of these.

- FWD position adjustment
- FWD back tension adjustment (Refer to 3-17.)
- Reel table (RVS) torque check (Refer to 3-18.)

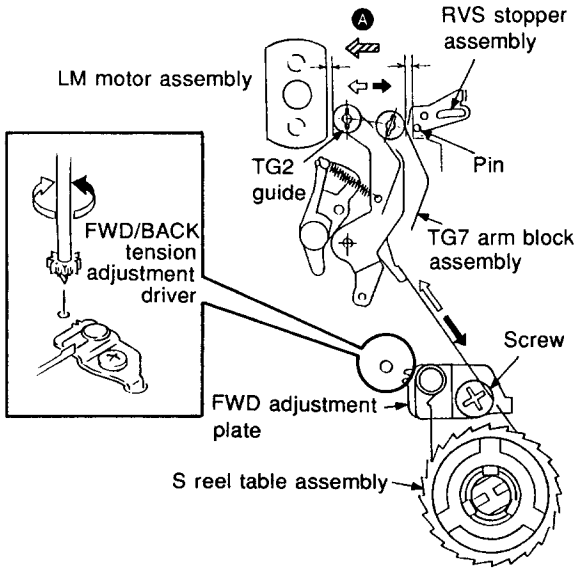
- **Adjusting**

1) Set the [R/P] mode, and check the position of TG2 guide.
- Make sure the space between TG2 guide and LM motor assembly and the space between TG2 guide and RVS stopper assembly's pin are equal (not to be hit to the guide and TG7 arm.).

2) Loosen the screw and move the TG2 guide with your fingers. Adjust the FWD adjustment plate with a FWD/BACK tension adjustment driver (Ref No. J-21), then fasten the screw tightly.
   Fixing torque: 0.0588 N • m (0.6 kg • cm)

Note: Make sure there is enough space to move the TG2 in the direction of arrow Ⓐ.

- When the space on the LM motor assembly is small, turn the FWD/BACK tension adjustment driver in the direction of ➡.
- When the space on the RVS stopper assembly is small, turn the FWD/BACK tension adjustment driver in the direction of ⇨.



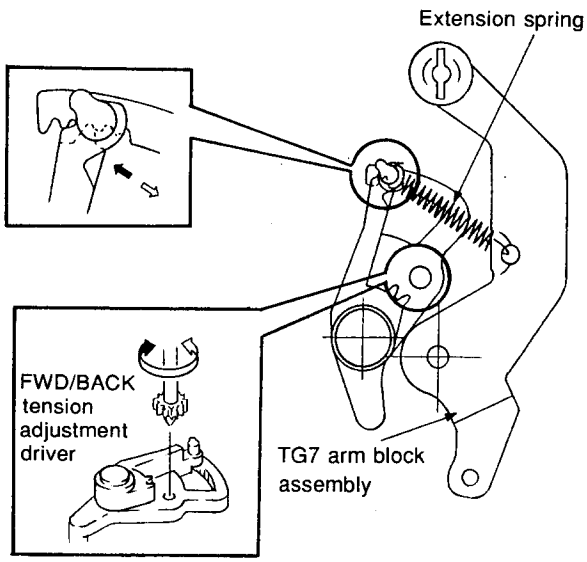
3-17. FWD BACK TENSION ADJUSTMENT

1. Adjusting

1) Set the FWD back tension cassette (Ref No. J-8).
2) Set the [REC] mode, then check that the reading of S side is 0.417 to 0.490 mN • m (4.25 to 5 g • cm) and the change is lower than 0.0490 mN • m (0.5 g • cm). If the reading is not satisfied the specification, adjust the followings.

- If the reading is higher than the specification (weaken the tension of spring)
  Turn the adjusting screwdriver counterclockwise to satisfy the specification.
- If the reading is lower than the specification (strengthen the tension of spring)
  Turn the adjusting screwdriver clockwise to satisfy the specification.

Note: When the FWD/BACK tension adjustment driver is turned, take out the torque cassette once.



- When the reading is more than the standard value, turn the FWD/BACK tension adjustment driver in the direction of ⇨.
- When the reading is less than the standard value, turn the FWD/BACK tension adjustment driver in the direction of ➡.

3-18. REEL TABLE TORQUE CHECK

- **Adjusting**

[FWD torque]

1) Set the FWD torque cassette (Ref No. J-7).
2) Set the FWD mode, then check that the torque value of the T reel table is 0.5393 to 1.258 mN • m (5.5 to 12.5 g • cm) at the center value of deflection and the change is 0.0981 mN • m (1.0 g • cm).

[RVS torque]

1) Set the RVS torque cassette (Ref No. J-6).
2) Set the RVS mode (by using EDIT SEARCH (–) button), then check that the torque value of the S reel table is 1.0787 to 1.9613 mN • m (11.0 to 20.0 g • cm) at the center value of deflection. **Note 1**

If the above values are not satisfied, check the position of FWD (tension regulator). Replace each reel table if there is no abnormal.

Note 1: Some speed of EDIT SEARCH is changed by double step due to strength of pressing. Select Normal speed (same as FWD) for the torque check.

3-19. T REEL TABLE ASSEMBLY

1. Removing

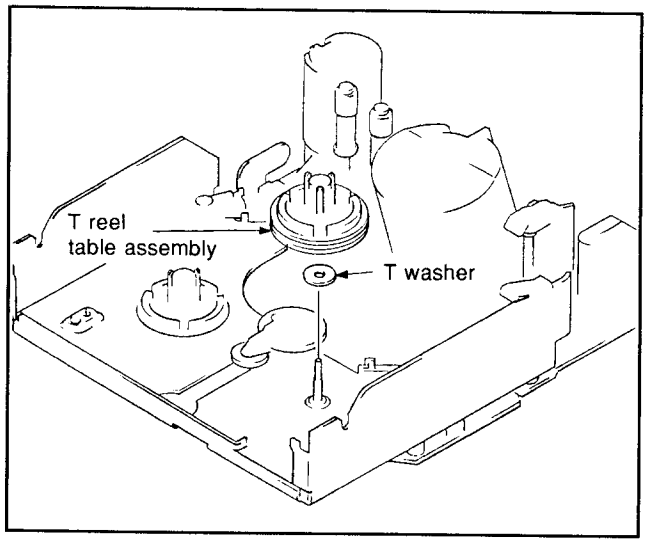
1) Refer to 1-1. to remove the cassette compartment assembly.
2) Refer to 3-10. to remove the LED base assembly.
3) Remove the T reel table assembly and T washer.

2. Attaching

1) Attach in the order of T washer and T reel table assembly.

Note: For attaching the T reel table assembly, perform "3-21. HEIGHT ADJUSTMENT FOR EACH REEL TABLE".

2) Refer to 3-10. to attach the LED base assembly.
3) Refer to 1-1. to attach the cassette compartment assembly.
4) Refer to 3-18. to check the torque of the reel table.



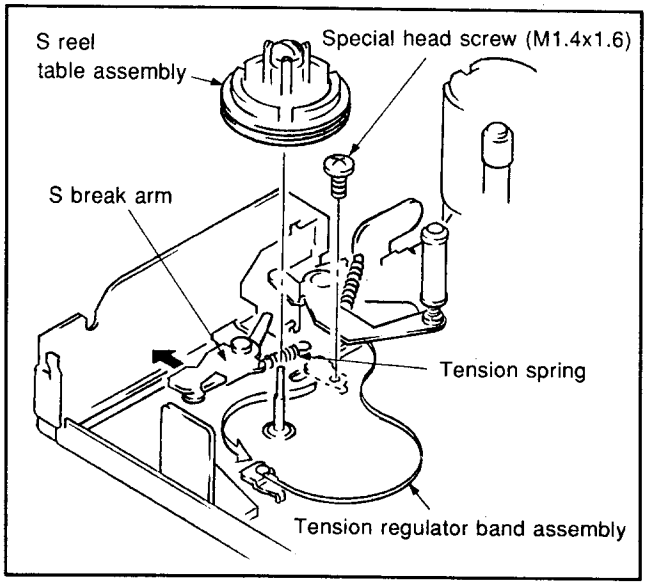
3-20. S REEL TABLE ASSEMBLY

1. Removing

1) Refer to 1-1. to remove the cassette compartment assembly.
2) Refer to 3-10. to remove the LED base assembly.
3) Remove the tension spring of the S break arm (LS chassis side only), and keep away in the direction of arrow.
4) Remove the screw and the tension regulator band assembly, then remove the S reel table assembly.

2. Attaching

1) Attach the S reel table assembly.
2) Set the [D. ON] mode, fix the tension regulator band assembly temporarily, and hook the tension spring. (There is a specified spring direction. (Refer to 3-13.))
3) Refer to 3-21. to adjust the height and tilt of each reel table.
4) Refer to 3-10. to attach the LED base assembly.
5) Refer to 1-1. to attach the cassette compartment assembly.
6) Refer to 3-16 to adjust the position of FWD.
7) Refer to 3-17. to adjust the FWD back tension.
8) Refer to 3-18. to check the reel's torque.



3-21. HEIGHT ADJUSTMENT FOR EACH REEL TABLE

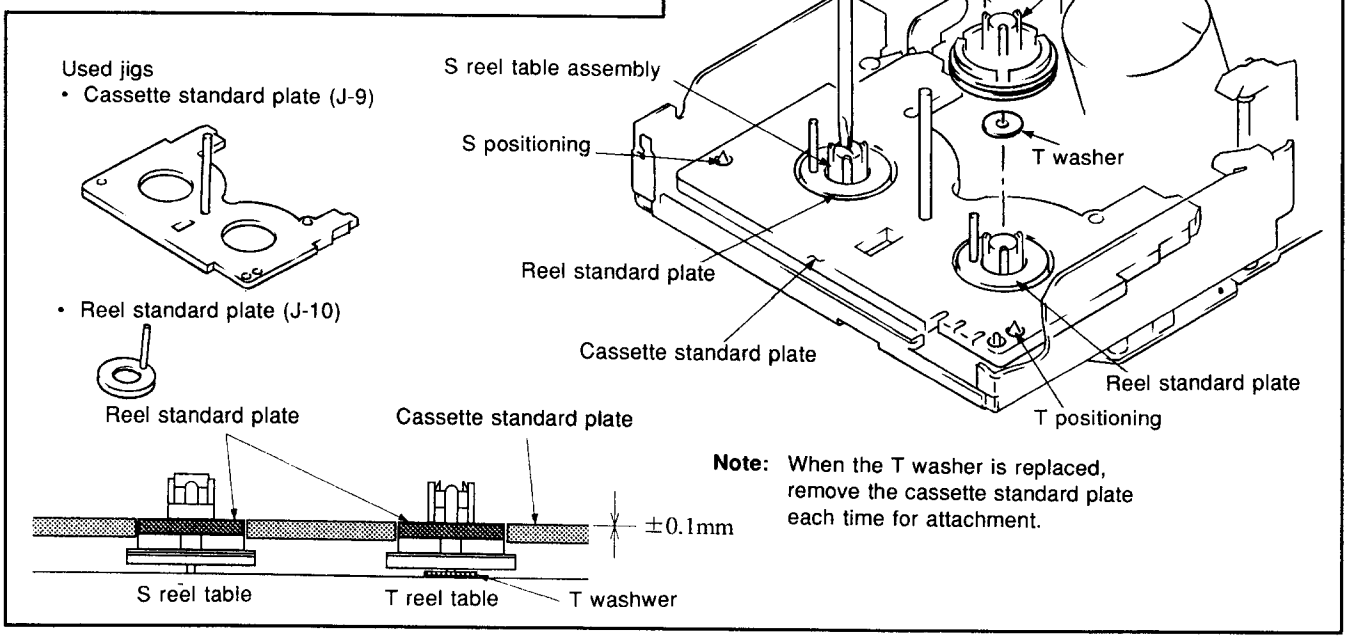
Note: In either case one side of reel table adjustment is aimed, adjust both sides of reel table.

- **Adjusting**

1) Refer to 1-1. to lift the cassette compartment assembly.
2) Set the [R/P] mode. Put the cassette standard plate (Ref No. J-9), turn the S reel table counterclockwise with a screwdriver (flat blade) to let down the reel table, and check that the cassette standard plate is not unstable. Be sure to remove the T reel table then.
3) Put the reel standard plate (Ref No. J-10) to adjust the S reel table with a screwdriver (flat blade), then adjust the height of the cassette standard plate and reel standard plate. (Height: ±0.1 mm, tilt: should be parallel)
4) Adjust the S reel table. Attach in the order of T reel table, cassette standard plate and reel standard plate to adjust the height and azimuth.
   (Height: ±0.1 mm, tilt: should be parallel)

- If not satisfied the specification, replace the T washer. (T reel side only)
  Yellow: 0.1 mm
  Green: 0.25 mm
  Black: 0.35 mm

5) Refer to 3-10. to attach the LED base assembly.
6) Refer to 1-1. to attach the cassette compartment assembly.



Note: When the T washer is replaced, remove the cassette standard plate each time for attachment.

3-22. LS CHASSIS BLOCK ASSEMBLY, GOOSENECK ASSEMBLY, RELAY GEAR, LOCK SLIDER, COMPULSION ARM ASSEMBLY, CAM SLIDER AND PINCH RELEASE ARM

1. Removing

1) Refer to 1-1. to remove the cassette compartment assembly.
2) Refer to 3-10. to remove the LED base assembly.
3) Remove the screw ① and remove the FPC holder.
4) Set the [S. OFF] mode.
5) Remove the washer to remove the gooseneck assembly and relay gear.
6) Remove the tension spring on the side of LS chassis and remove the lock slider in the direction of arrow.
7) Set the [D. ON] mode, remove the two of screw ②, then set the [S. OFF] mode.

Note: Do not remove the cam slider from the LS chassis except the replacement.

8) Remove the two of screw ③ and remove the LS chassis block assembly.

Note: When removing the LS chassis block assembly, remove it pressing the TG7 arm block assembly not to give a shock to the tension regulator band. (Remove it pressing the pinch arm as well.)

9) Remove the compulsion arm assembly and pinch release arm.

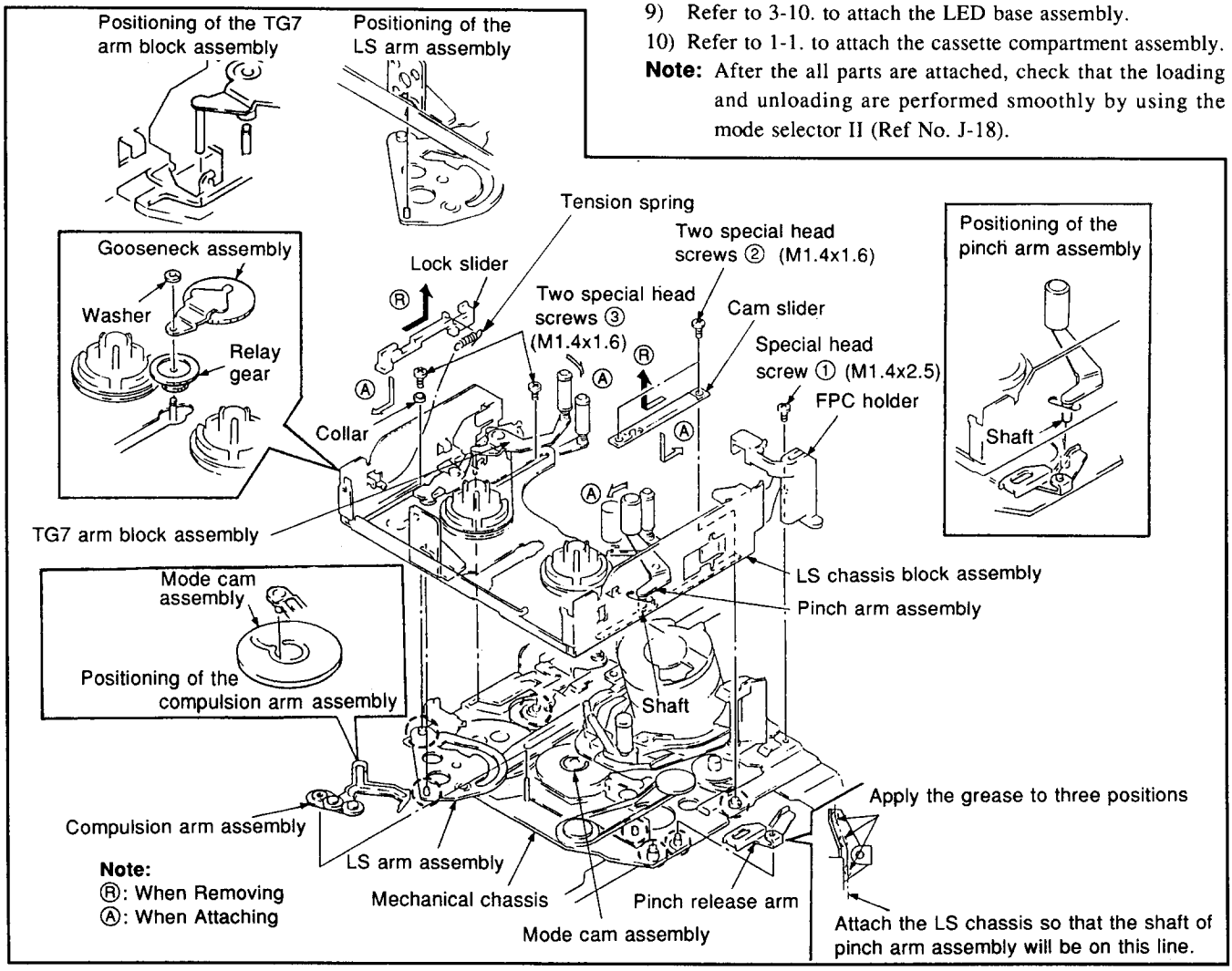
2. Attaching

1) Set the [S. OFF] mode.
2) Apply the grease (seven positions, 3 mm dia.) to the mechanical chassis and LS arm assembly.
   Grease: Floil Grease (SG-941)
3) Attach the compulsion arm assembly and pinch release arm.
4) Apply the grease (three positions, 3 mm dia.) to the pinch release arm, then put the LS chassis block assembly.

Note: Pay attention to adjust each position of the LS arm assembly, TG7 arm block assembly and pinch arm assembly.

5) Attach in the order of two of screw ③ (do not forget to put in the collar), lock slider and tension spring.
   Fixing torque: 0.0981 N • m (1 kg • cm)
6) Set the [D. ON] mode, attach the cam slider (pay attention to the direction for attaching) and two of screw ②.
   Fixing torque: 0.0981 N • m (1 kg • cm)
7) Attach the gooseneck assembly with a relay gear and a washer.
8) Attach the FPC holder with a screw ①.
   Fixing torque: 0.0588 N • m (0.6 kg • cm)
9) Refer to 3-10. to attach the LED base assembly.
10) Refer to 1-1. to attach the cassette compartment assembly.

Note: After the all parts are attached, check that the loading and unloading are performed smoothly by using the mode selector II (Ref No. J-18).



3-23. GL (S) BLOCK ASEMBLY (COASTER (S) ASSEMBLY, GL (S) ASSEMBLY AND RAIL (S))

1. Removing

1) Refer to 1-1. to remove the cassette compartment assembly.
2) Refer to 3-10. to remove the LED base assembly.
3) Refer to 3-22. to remove the gooseneck assembly and LS chassis block assembly.
4) Refer to 3-1. to remove the drum assembly.
5) Set the [STOP—RVS] mode.
6) Remove the screw, pick up the ◌ part, slide the rail (S) in the direction of arrow Ⓐ, and set the [D. ON] mode.

Note: Check that the coaster (S) assembly is removed from the rail of mechanical chassis then.

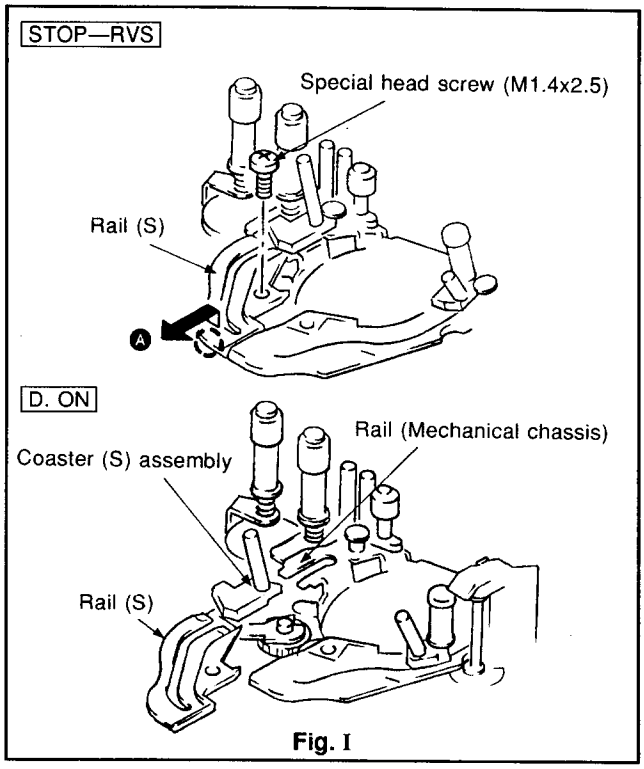


Fig. I

7) Pick up and remove the GL (S) assembly.
8) Remove the washer and remove each parts.

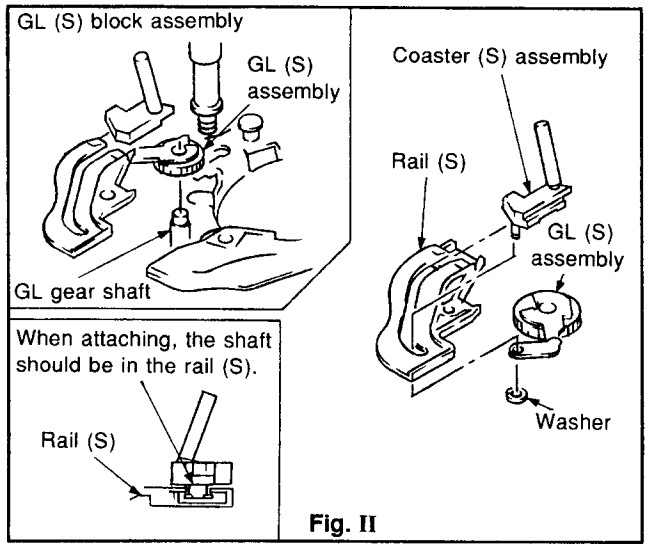


Fig. II

2. Attaching

1) Attach the coaster (S) assembly to the rail (S), then attach the GL (S) assembly. (Refer to the figure II)

Note: Pay attention to the direction of each parts' attachment.

2) Set the [S. OFF] mode.

Note: The [S. OFF] mode is the condition that all phase are matched as far as it is not abnormal. If there is a difference of phase, refer to "3-30. EACH GEAR AND MODE CAM ASSEMBLY PHASE ADJUSTMENT" to adjust the phase.

3) Apply the grease (1.5 mm dia.) to the GL gear shaft and attach the GL (S) assembly so that the each phase meets the LS arm assembly and GL (T) assembly.
   Grease: Floil Grease (SG-941)

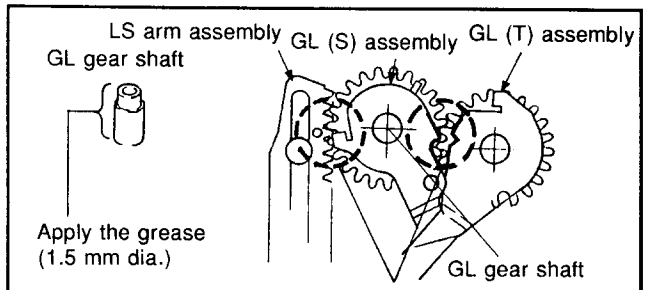


Fig. III Adjust the phase.

4) Put the coaster (S) assembly to the rail of mechanical chassis by using the mode selector II (Ref No. J-18).

Note: Press the mode selector's button by instalments adjusting the direction of the coaster (S) assembly.
   Mode display: [S. OFF] — [STOP—RVS]

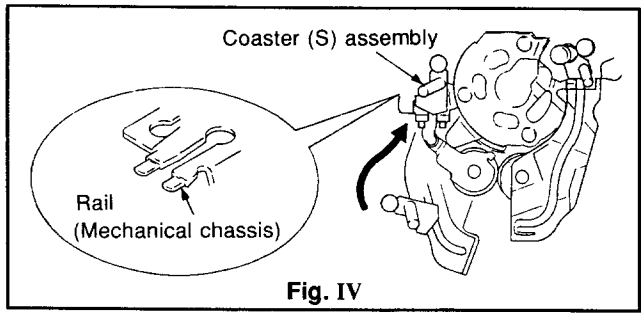


Fig. IV

5) Attach the rail (S) to the rail of mechanical chassis and GL gear shaft in order, and fasten the screw.
   Fixing torque: 0.00588 N • m (0.6 kg • cm)

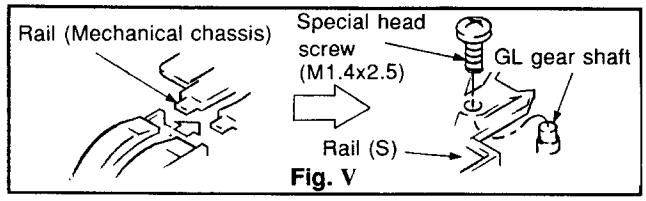


Fig. V

6) Refer to 3-1. to attach the drum assembly.
7) Refer to 3-22. to attach the gooseneck assembly and LS chassis block assembly.
8) Refer to 3-10. to attach the LED base assembly.
9) Refer to 1-1. to attach the cassette compartment assembly.

3-24. GL (T) BLOCK ASSEMBLY (COASTER (T) ASSEMBLY, GL (T) ASSEMBLY, RAIL (T) AND TG5 ASSEMBLY)

1. Removing

1) Refer to 1-1. to remove the cassette compartment assembly.
2) Refer to 3-10. to remove the LED base assembly.
3) Refer to 3-22. to remove the gooseneck assembly and LS chassis block assembly.
4) Refer to 3-9. to remove the capstan motor.
5) Refer to 3-1. to remove the drum assembly.
6) Set the STOP—RVS mode.
7) Remove the screw ①, pick up the ◌ part, remove the rail (T) in the direction of arrow Ⓐ, then set the D. ON mode.

Note: Check that the coaster (T) assembly is removed from the rail of mechanical chassis then.

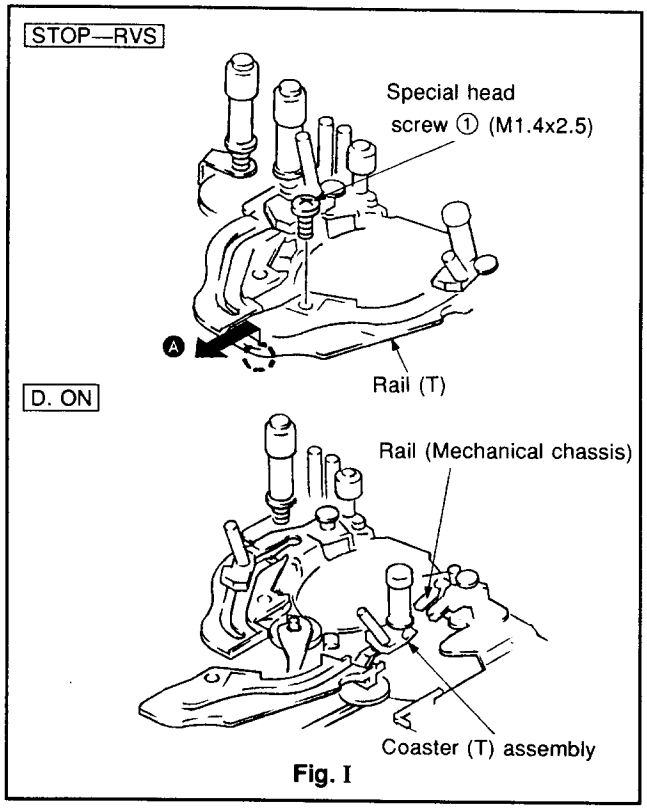


Fig. I

8) Pick up the GL (T) assembly with a pair of tweezers (a pincette) and remove.
9) Remove a washer and a screw ②, then remove each parts.

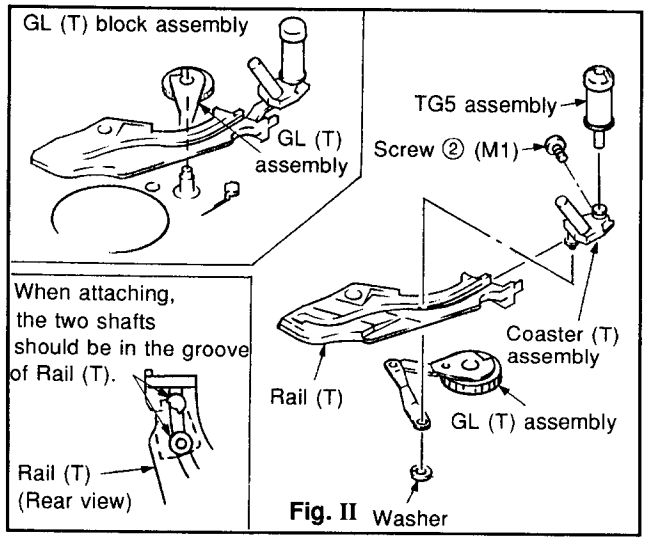


Fig. II

2. Attaching

1) Fix temporarily the TG5 assembly with a screw ② to the coaster (T) assembly. (Refer to the figure II)
   Fixing torque: 0.0490 N • m (0.5 kg • cm)
2) Attach the coaster (T) assembly to the rail (T), then attach the GL (T) assembly. (Refer to the figure II)

Note: Pay attention to the direction of each parts' attachment.

3) Apply the grease (1.5 mm dia.) to the GL gear shaft and attach the GL (T) assembly so that the each phase meets the GL (S) assembly.

Note: After the attachment, set the [S. OFF] mode to check the phase.

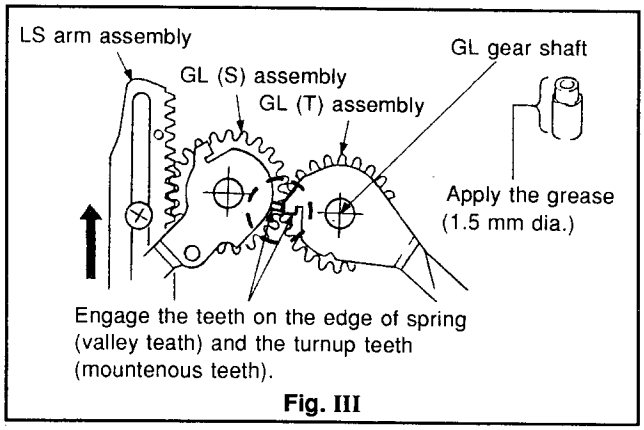


Fig. III

4) Put the coaster (T) assembly into the rail of mechanical chassis by using the mode selector II (Ref No. J-18).

Note: Press the mode selector's button by instalments adjusting the direction of the coaster (T) assembly.
Mode display: [S. OFF] — [STOP—RVS]

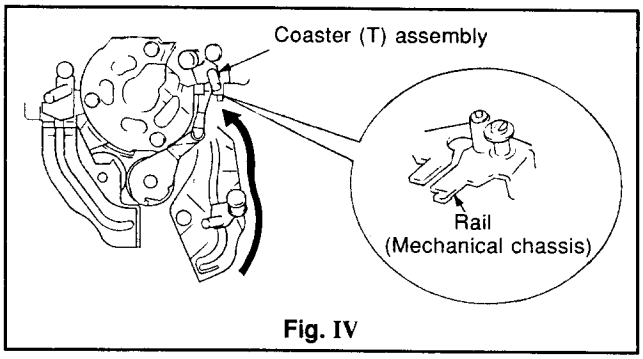


Fig. IV

5) Attach the rail (T) to the rail of mechanical chassis and GL gear shaft with a screw ① in order.
   Fixing torque: 0.0588 N • m (0.6 kg • cm)

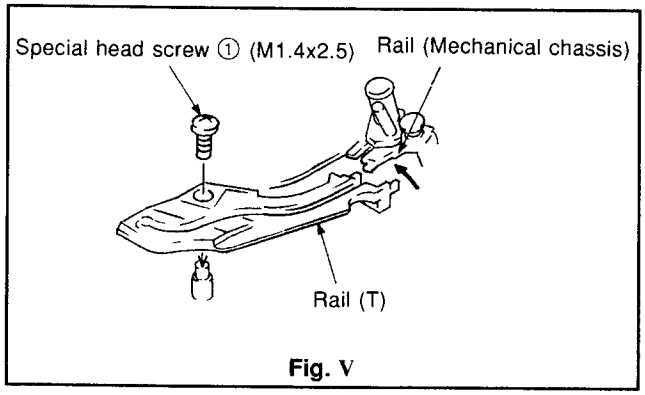


Fig. V

6) Attach the TG5 preset base (Ref No. J-13) and adjust the azimuth and height of the TG5 guide.
   • Azimuth adjustment
   Turn the gate adjustment screw and adjust parallel to jigs.
   • Height adjustment
   Turn the TG5 assembly so that the space between the jig and the TG5 (upper) flange is equal to the space between the jig and the TG5 (lower) flange. (A=B)
7) Rotate the adjustment screw in a 60-degree arc counterclockwise.

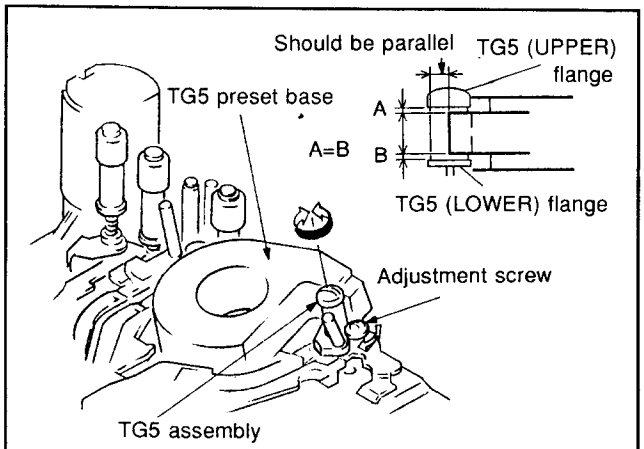


Fig. VI

8) Refer to 4-2. to adjust the tracking.
9) Refer to 3-1. to attach the drum assembly.
10) Refer to 3-9. to attach the capstan motor.
11) Refer to 3-22. to attach the gooseneck assembly and LS chassis block assembly.
12) Refer to 3-10. to attach the LED base assembly.
13) Refer to 1-1. to attach the cassette compartment assembly.

3-25. MODE CAM ASSEMBLY AND FP-245 FLEXIBLE BOARD

1. Removing

1) Refer to 1-1 to remove the cassette compartment assembly.
2) Refer to 3-10. to remove the LED base assembly.
3) Refer to 3-22. to remove the gooseneck assembly, LS chassis block assembly and reform arm assembly.
4) Set the [STOP—RVS] mode.
5) Remove the screw ① and keep away from the rail (S).
6) Remove a screw ② and two of screw ③, then remove the mode cam assembly and FP-245 flexible board.

Note: Pay attention the FP-245 flexible board is connected to the mode selector II change connector board (Ref No. J-19).

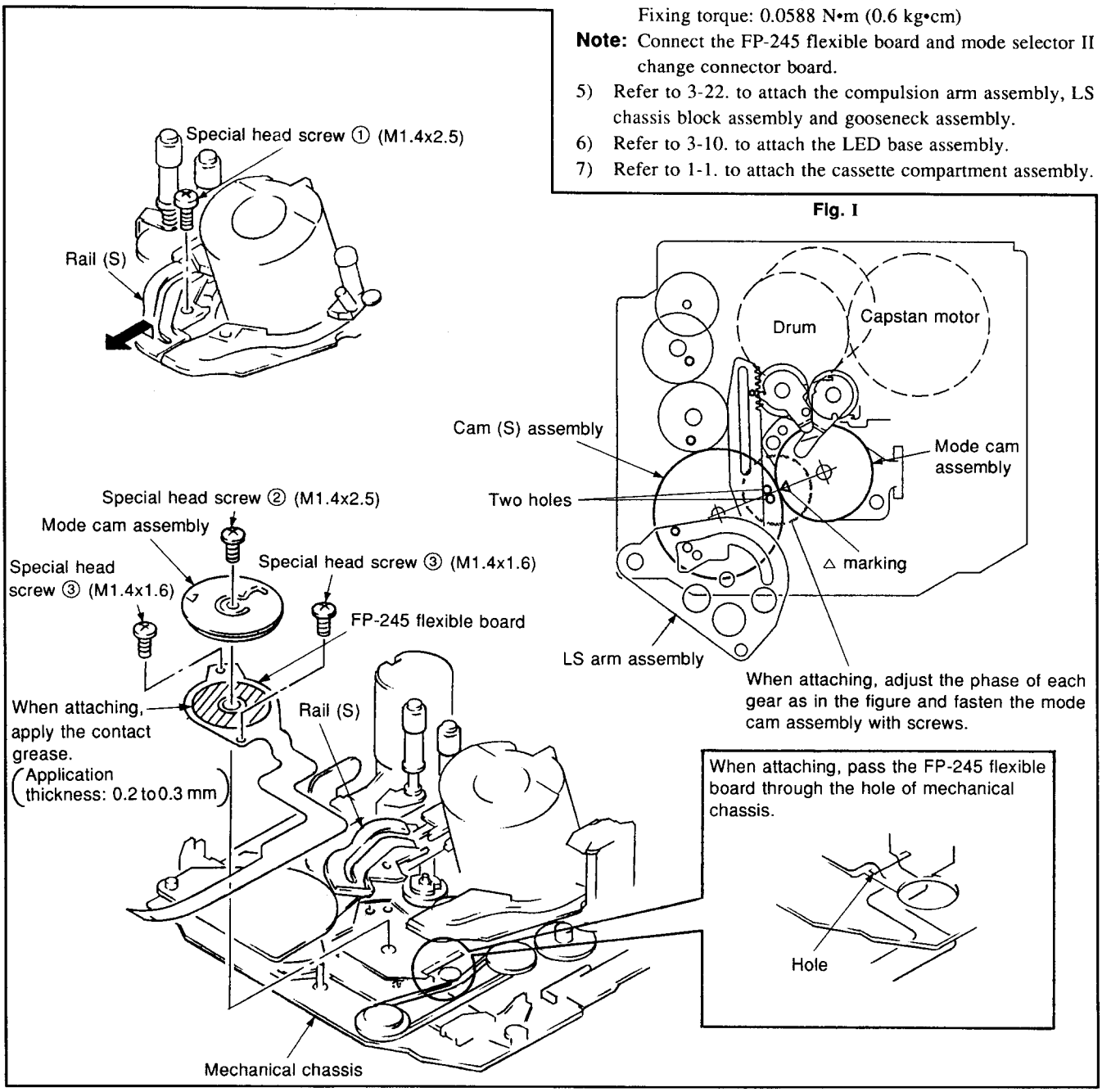
2. Attaching

1) Attach the FP-245 flexible board with two of screw ③ and apply the contact grease to a pattern.
   Fixing torque: 0.0981 N•m (1 kg•cm)
   Thickness application of grease: 0.2 to 0.3 mm (A little overflow is no problem.)
2) Put the mode cam assembly on the fitting shaft. (Do not fasten with a screw.)
3) Attach the rail (S) with a screw ① and load by using the mode selector II as in the figure I. (Condition: the phase of each gear is matched. [S. OFF] mode.)
   Fixing torque: 0.0588 N•m (0.6 kg•cm)
4) Pay attention to the phase with the cam (S) assembly. Fix the mode cam assembly with a screw ②.
   Fixing torque: 0.0588 N•m (0.6 kg•cm)

Note: Connect the FP-245 flexible board and mode selector II change connector board.

5) Refer to 3-22. to attach the compulsion arm assembly, LS chassis block assembly and gooseneck assembly.
6) Refer to 3-10. to attach the LED base assembly.
7) Refer to 1-1. to attach the cassette compartment assembly.

Fig. I


Special head screw ① (M1.4x2.5)
Rail (S)
Drum
Capstan motor
Cam (S) assembly
Mode cam assembly
Two holes
Special head screw ② (M1.4x2.5)
Mode cam assembly
Special head screw ③ (M1.4x1.6)
Special head screw ③ (M1.4x1.6)
FP-245 flexible board
△ marking
LS arm assembly
When attaching, adjust the phase of each gear as in the figure and fasten the mode cam assembly with screws.
When attaching, apply the contact grease. (Application thickness: 0.2 to 0.3 mm)
Rail (S)
When attaching, pass the FP-245 flexible board through the hole of mechanical chassis.
Hole
Mechanical chassis

3-26. LS ARM ASSEMBLY, EJ ARM AND CAM (S) ASSEMBLY

1. Removing

1) Refer to 1-1. to remove the cassette compartment assembly.
2) Refer to 3-1. to remove the drum assembly.
3) Refer to 3-10. to remove the LED base assembly.
4) Refer to 3-22 to remove the gooseneck assembly and LS chassis block assembly.
5) Refer to 3-23. to remove the GL (S) block assembly.
6) Set the [S. OFF] mode, remove the screw ①, then remove the LS arm assembly.
7) Remove in the order of tension spring and screw ② from the side of LS chassis, then remove the EJ arm and cam (S) assembly.

2. Attaching

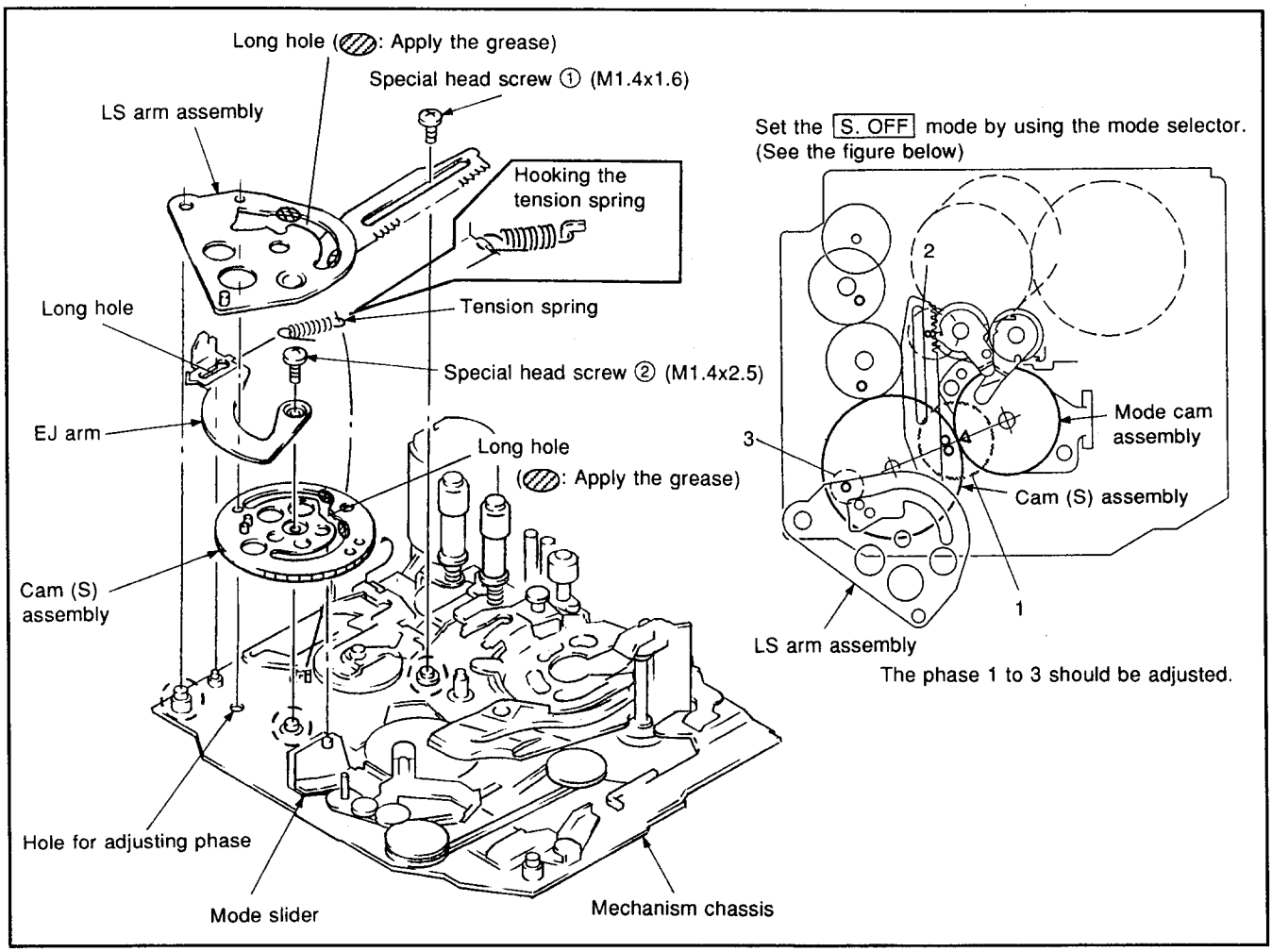
1) Check the [S. OFF] mode and apply the grease (three positions, 1.5 mm dia.) to the mechanical chassis.
   Grease: Floil Grease (SG-941)

Note: [S. OFF] mode is the condition that the phase of each gear is matched.

2) Apply the grease (◌: two positions, 1.5 mm dia.) into a long hole of the cam (S) assembly, attach it with attention to the phase.
   Grease: Floil Grease (SG-941)
3) Apply the grease (1.5 mm dia.) into a long hole of the EJ arm. Attach it with a screw ② and hook the tension spring.
   Fixing torque: 0.0981 N•m (1 kg•cm)

Note: There is a specified direction of the spring hook.

4) Apply the grease (two positions, 1.5 mm dia.) into a long hole of the LS arm assembly. Pay attention to the phase with the cam (S) assembly and mode slider, and attach with a screw ①.
   Fixing torque: 0.0981 N•m (1 kg•cm)
5) Refer to 3-23 to attach the GL (S) block assembly.
6) Refer to 3-22. to attach the LS chassis block assembly and gooseneck assembly.
7) Refer to 3-10. to attach the LED base assembly.
8) Refer to 3-1. to attach the drum assembly.
9) Refer to 1-1. to attach the cassette compartment assembly.



3-27. ADJUSTMENT ARM ASSEMBLY, RELAY BELT, RELAY PULLEY ASSEMBLY AND CONVERSION PULLEY ASSEMBLY

1. Removing

1) Refer to 1-1. to remove the cassette compartment assembly.
2) Refer to 3-10. to remove the LED base assembly.
3) Refer to 3-22. to remove the gooseneck assembly, LS chassis block assembly and reform arm assembly.
4) Remove in the order of tension spring and a screw from the side of mechanical chassis, then remove the adjustment arm assembly.

Note: Remove the spring from the rear of mechanical chassis.

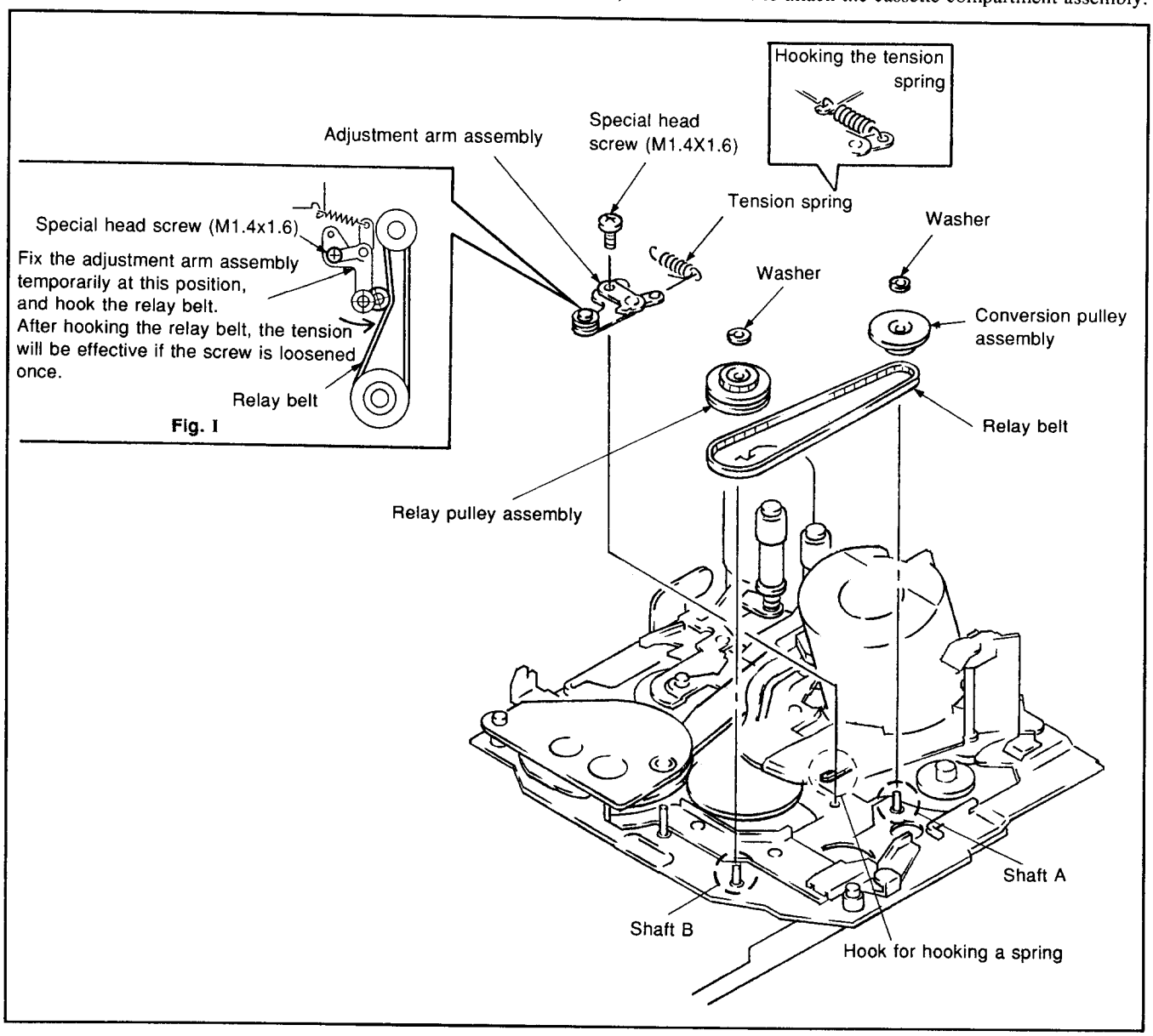
5) Remove the relay belt and washers, then remove the relay pulley assembly and conversion pulley assembly.

2. Attaching

1) Hook the tension spring to the side of LS chassis, then fix temporarily the adjustment arm assembly at the position in the figure I.

Note: There is a specified direction of the spring hook.

2) Apply one quarter drop oil to the shaft A and B each. (◌ part)
   Oil: NT68
3) Attach the relay pulley assembly and conversion pulley assembly with each washer, then hook the relay belt. (Pay attention to a torsion in a belt).
4) Loosen the screw, check a tension to the relay belt, and fasten the screw tightly. (Refer to the figure I.)
   Fixing torque: 0.0981 N • m (1 kg • cm)
5) Refer to 3-22. to attach the compulsion arm assembly, LS chassis block assembly and gooseneck assembly.
6) Refer to 3-10. to attach the LED base assembly.
7) Refer to 1-1. to attach the cassette compartment assembly.


Hooking the tension spring
Adjustment arm assembly
Special head screw (M1.4X1.6)
Tension spring
Washer
Washer
Conversion pulley assembly
Relay belt
Relay pulley assembly
Shaft A
Shaft B
Hook for hooking a spring
Special head screw (M1.4x1.6)
Fix the adjustment arm assembly temporarily at this position, and hook the relay belt.
After hooking the relay belt, the tension will be effective if the screw is loosened once.
Relay belt
Fig. I

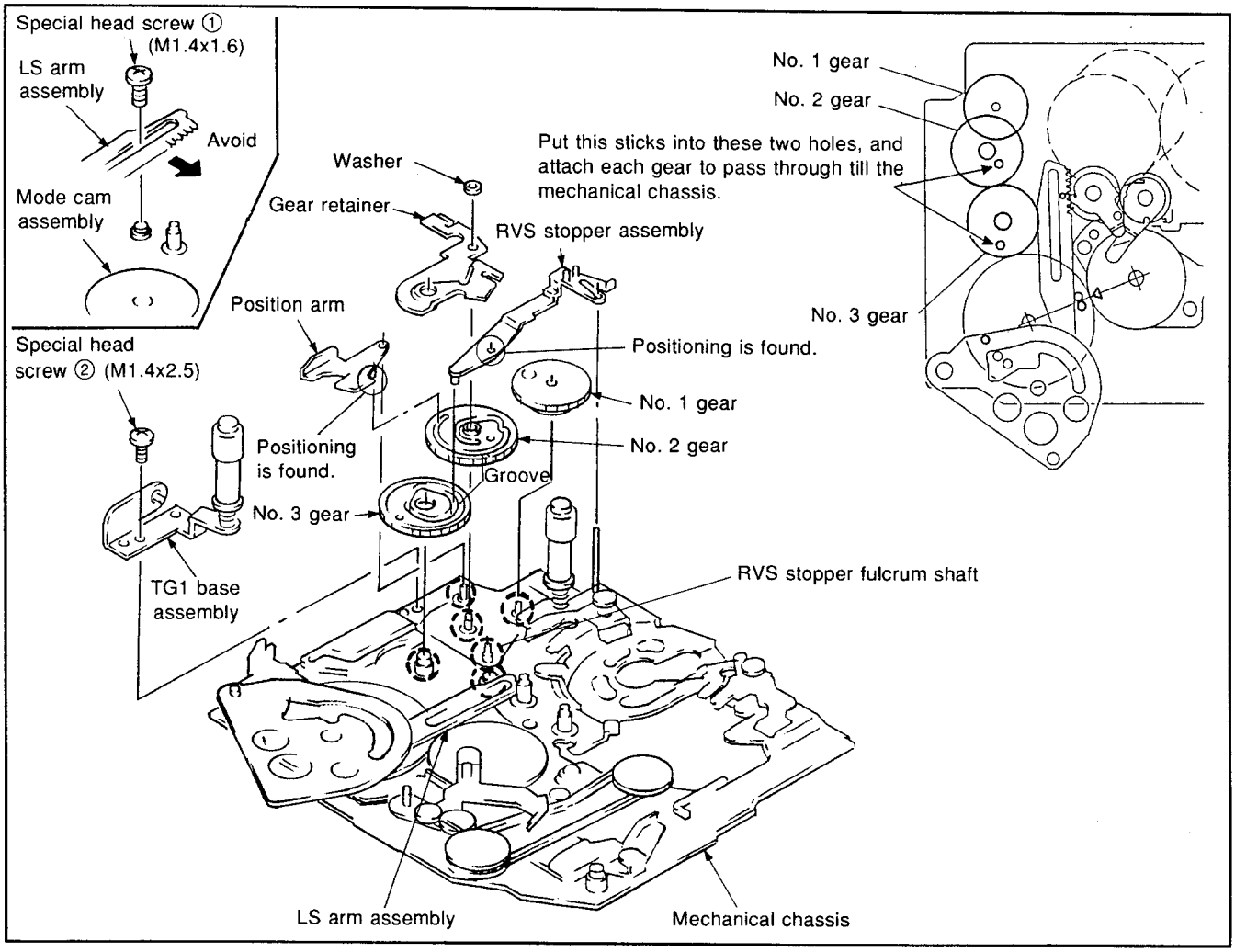
3-28. GEAR RETAINER, POSITION ARM, RVS STOPPER ASSEMBLY AND GEAR NO.1, 2 AND 3

1. Removing

1) Refer to 1-1. to remove the cassette compartment assembly.
2) Refer to 3-1. to remove the drum assembly.
3) Refer to 3-2. to remove the HC assembly.
4) Refer to 3-10. to remove the LED base assembly.
5) Refer to 3-22. to remove the gooseneck assembly and LS chassis block assembly.
6) Refer to 3-23. to remove the GL (S) block assembly.
7) Refer to 3-8. to remove the LM motor.
8) Remove the screw ① and keep away from the LS arm assembly.
9) Remove the washer and remove the gear retainer, position arm and RVS stopper assembly.
10) Remove the screw ② and remove the TG1 base assembly.
11) Remove each gear of No. 1, 2, and 3.

2. Attaching (Refer to "3-30. EACH GEAR PHASE ADJUSTMENT" for detail.)

1) Apply the grease (1.5 mm dia.) to six positions of ◌ part and each gear of No. 1, 2 and 3.
2) Attach in the order of No. 3, 2 and 1 with attention to the phase. (As for gear of No. 1, phase adjusting is not needed.)
3) Attach the TG1 base assembly with a screw ②.
4) Apply the grease to the groove of gears No. 2 and 3.
   Grease: Floil Grease (SG-941)
5) Attach in the order of RVS stopper assembly (The position adjustment is needed. RVS stopper fulcrum shaft), position arm (Adjust the pin and the groove of No. 2 gear.) and gear retainer with a washer.
6) Attach the LS arm assembly with a screw ①.
   Fixing torque: 0.0981 N • m (1 kg • cm)
7) Refer to 3-8. to attach the LM motor assembly.
8) Refer to 3-23. to attach the GL (S) block assembly.
9) Refer to 3-22. to attach the LS chassis block assembly and gooseneck assembly.
10) Refer to 3-10. to attach the LED base assembly.
11) Refer to 3-2. to attach the HC assembly.
12) Refer to 1-1. to attach the cassette compartment assembly.



3-29. MODE SLIDER

1. Removing

1) Refer to 1-1. to remove the cassette compartment assembly.
2) Refer to 3-1. to remove the drum assembly.
3) Refer to 3-10. to remove the LED base assembly.
4) Refer to 3-22. to remove the gooseneck assembly, LS chassis block assembly, compulsion arm assembly and pinch release arm.
5) Refer to 3-23. and 3-24. to remove the each GL (S) and (T) block assembly.
6) Refer to 3-25. to remove the LS arm assembly, EJ arm and cam (S) assembly.
7) Loosen a screw, slide the adjustment arm assembly in the direction of arrow (fixed at the position in the figure I) Ⓐ, and remove the relay belt.
8) Remove the mode slider in the direction of arrow. (Pay attention to lose a of LS roller.)

2. Attaching

1) Apply the grease (1.5 mm dia.) to the shaft A and attach the mode slider in the direction of arrow.
   Grease: Floil Grease (SG-941)
2) Apply the grease (1.5 mm dia.) to each shaft B and C, and attach the LS roller to the shaft B.
   Grease: Floil Grease (SG-941)
3) After the relay belt is attached, loosen the screw, check a tension to the relay belt, and fasten the screw tightly. (Refer to the figure I.)
   Fixing torque: 0.0981 N • m (1 kg • cm)
4) Adjust the phase of each gear of No. 2 and 3 and the mode cam assembly by using the mode selector II. (Refer to 3-30.)

Note: The mode cam assembly should be manual operated.

5) Refer to 3-26. to attach the cam (S) assembly, EJ arm and LS arm assembly.
6) Refer to 3-23. and 3-24. to attach the GL (S) and (T) block assembly.
7) Refer to 3-22. to attach the release arm, compulsion arm assembly, LS chassis block assembly and gooseneck assembly.
8) Refer to 3-10. to attach the LED base assembly.
9) Refer to 3-1. to attach the drum assembly.
10) Refer to 1-1. to attach the cassette compartment assembly.

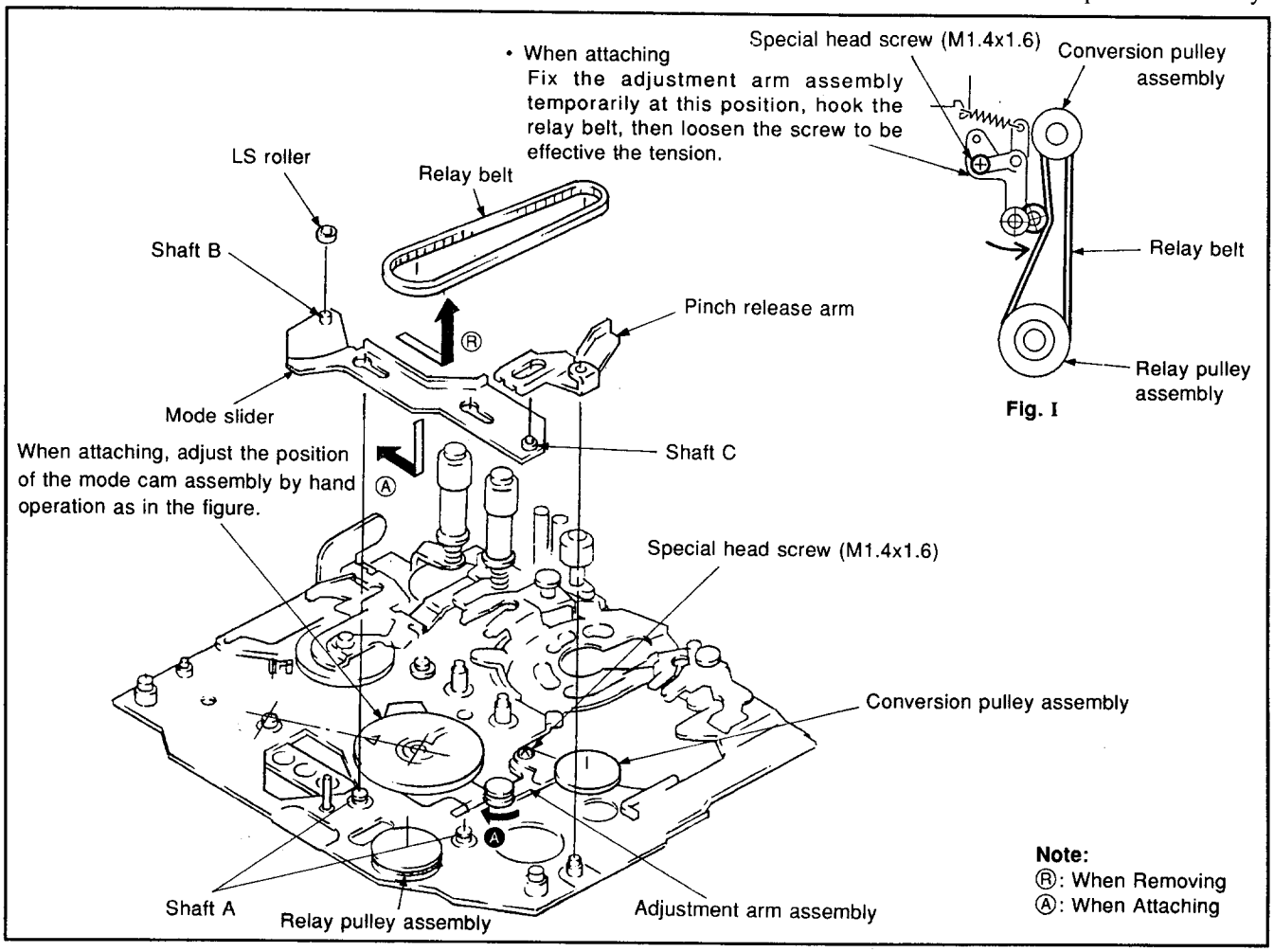

• When attaching
Fix the adjustment arm assembly temporarily at this position, hook the relay belt, then loosen the screw to be effective the tension.
Special head screw (M1.4x1.6)
Conversion pulley assembly
LS roller
Relay belt
Shaft B
Pinch release arm
Relay belt
Relay pulley assembly
Mode slider
When attaching, adjust the position of the mode cam assembly by hand operation as in the figure.
Shaft C
Special head screw (M1.4x1.6)
Conversion pulley assembly
Shaft A
Relay pulley assembly
Adjustment arm assembly
Note:
Ⓡ: When Removing
Ⓐ: When Attaching

Fig. I

3-30. EACH GEAR AND MODE CAM ASSEMBLY PHASE ADJUSTMENT

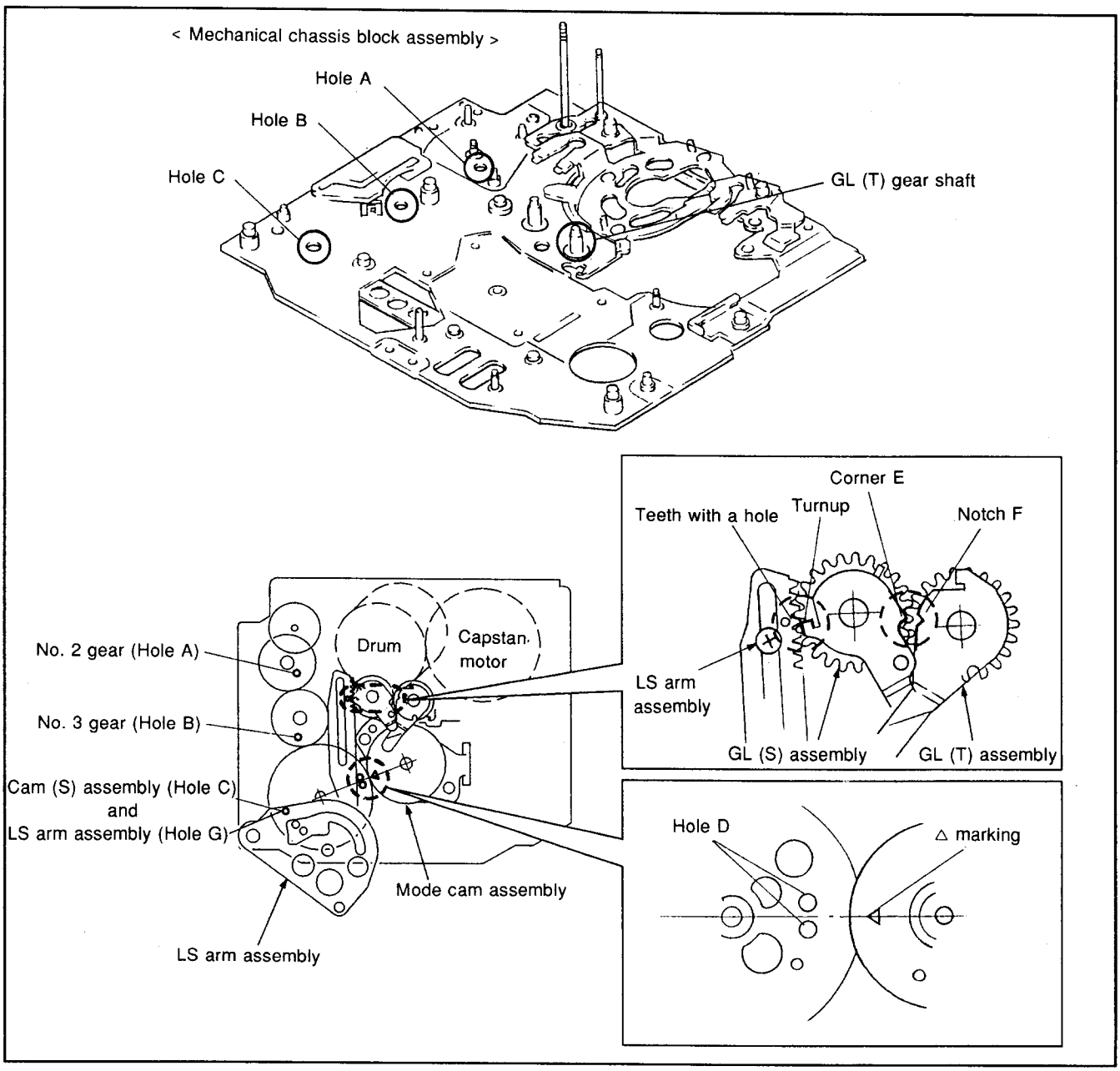
In case the phase of mode cam assembly and its related gears does not match, so that the normal operation is not performed due to replacement or removal of parts needed to adjust the phase, adjust the phase of each parts as below.

- **Phase adjusting**

1) Set each hole A of gear No. 2, B of gear No. 3 and C of cam (S) assembly to the holes A, B and C on the mechanical chassis in layers.
2) Set the position of the △ mark on the mode cam assembly between two of holes D on the cam (S) assembly.
3) Attach the GL (T) assembly to the GL (T) gear shaft.
4) Set the position of the notch F and the corner E on the GL (S) assembly to the GL (T) assembly.
5) Set the hole G on the LS arm assembly to the hole C on the cam (S) assembly in layers. Also set the position of the teeth with a hole of the LS arm assembly and the turn-up of the GL (S) assembly at the same time.
6) After adjusting all phase, check the [S. OFF] mode by using the mode selector II (Ref No. J-18).

Note 1: The [S. OFF] mode is the condition that all phase are matched.

Note 2: As for attaching each gear and mode cam assembly, refer to attaching for each.



4. TAPE PATH ADJUSTMENT

4-1. PREPARATION FOR ADJUSTMENT

1) Refer to 2-2. to clean the tape running surface (tape guide, drum, capstan and pinch roller).
2) Connect the adjustment remote commander (Ref No. J-17) to the remote terminal of the set and turn the HOLD switch on.
3) Select the data of page: 3 and address: 3C , then set data: 07. (Note 1)
4) Connect the oscilloscope (Note 2). (Note 1)
   Channel 1—RS-63/64 board CN775 ① pin (Note 3)
   External trigger—RS-63/64 board CN775 ⑥ pin
   Trigger scope— +

Note 1: Refer to each service manual due to difference between each model. The case of DCR-VX700/VX1000 series is mentioned here.

Note 2: Connect the oscilloscope through the multi CP jig 2 (J-6082-140-A) or CPC jig (J-6082-311-A).

Note 3: Connect CN775 ① and ② pin (GND) at 75Ω resistance.

5) Playback a tracking tape (XH2-1) (Ref No. J-5).
6) Check that the RF waveform is flat at the entrance and exit of the oscilloscope. (See the figure I-Ⓐ) If the RF waveform is not flat at the entrance and exit (See the figure I-Ⓑ, Ⓒ) , adjust according to the adjustment from 4-2.
7) After adjusting and check satisfied with step 6), reset the data which was set in step 3) by using the adjustment remote commander. (Note 1)
   1. Select the data of page: 3 and address: 3C, then set the data: 00.
   2. Remove the power supply.

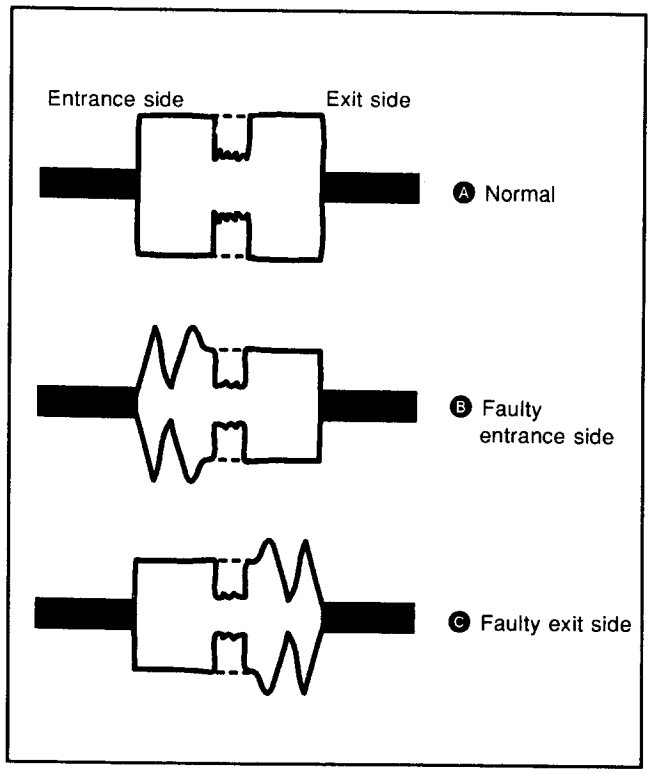
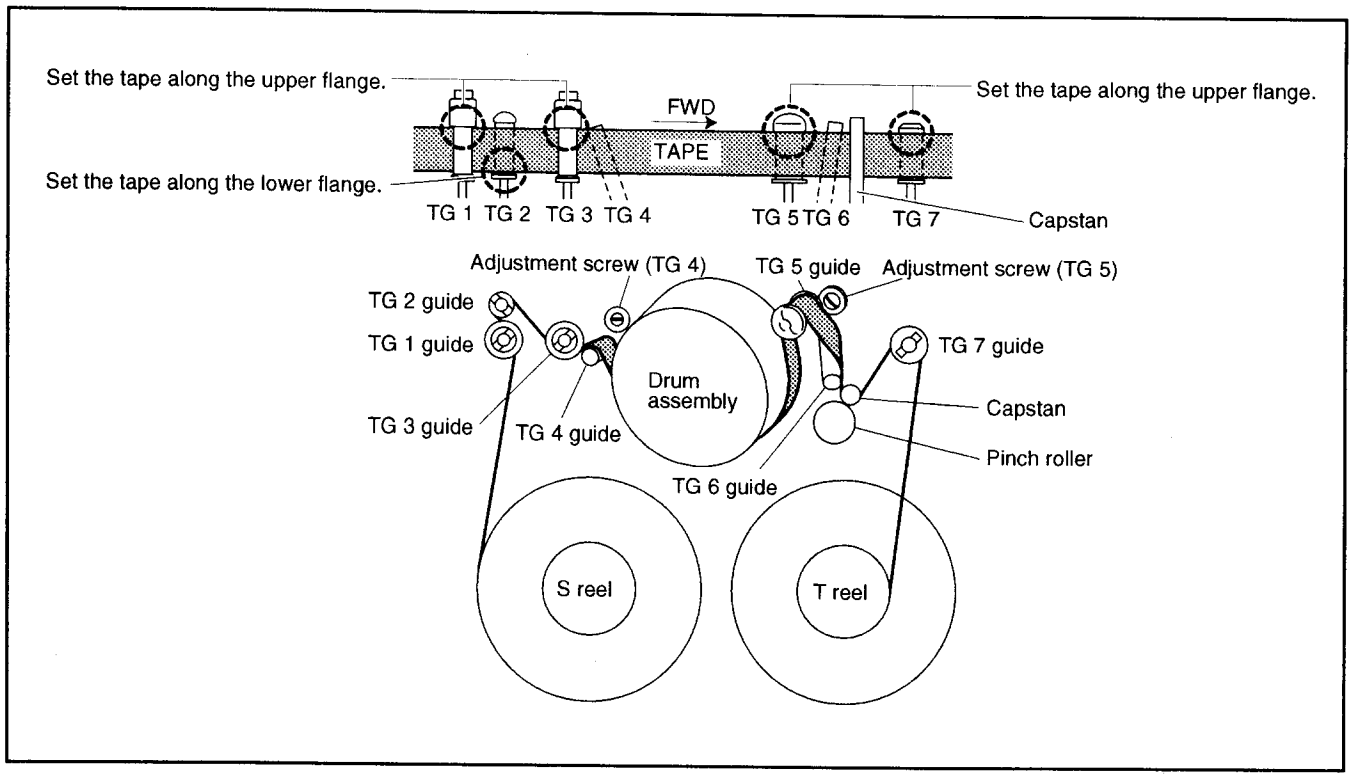


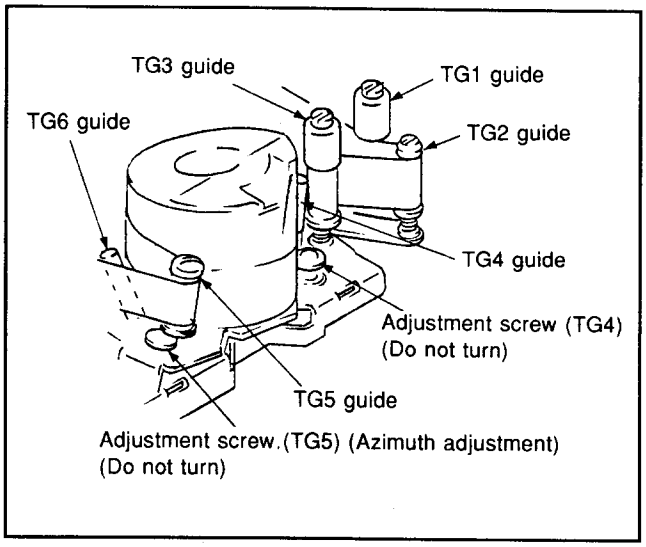
Fig. I

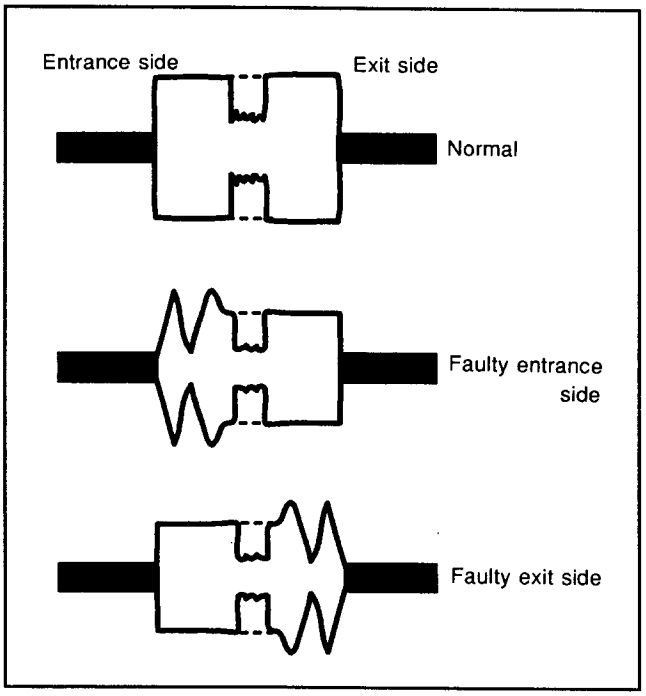


4-2. TRACKING ADJUSTMENT

1) Playback the tracking tape (XH2-1) (Ref No. J-5).
2) Turn the TG3 guide so that the waveform is flat at the entrance.
3) Turn the TG5 guide so that the waveform is flat at the exit.

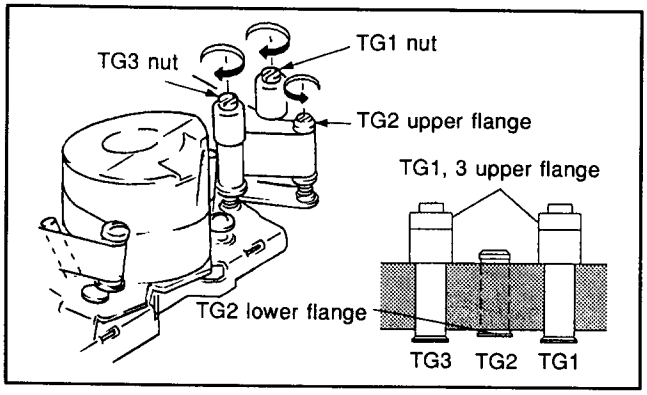
Note: Do not loosen the gate adjusting screw of TG4 and TG5.





4-3. TG1, TG2 AND TG3 GUIDE ADJUSTMENT

1) Playback the tracking tape (XH2-1) (Ref No. J-5).
2) Be sure the tape is parallel with the upper flange of TG1 and TG3 during FWD running, and check the tape is parallel with the lower flange of TG2 as well. In case there is a space between each flange and the tape, rotate the TG3 nut clockwise to be parallel with each flange as for TG1 and TG3, rotate the upper flange counterclockwise to be parallel with the lower flange as for TG2.



Confirm no change of the tracking waveform. If the tracking waveform at the entrance describes a downward curve as shown in the figure II, raise the height of TG2 lower flange to adjust the tracking at the entrance.

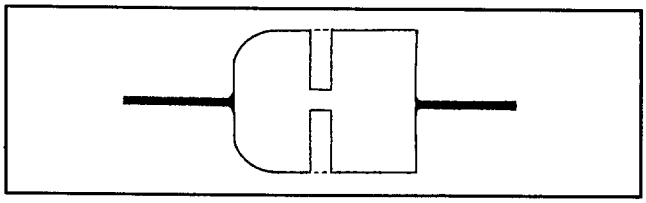
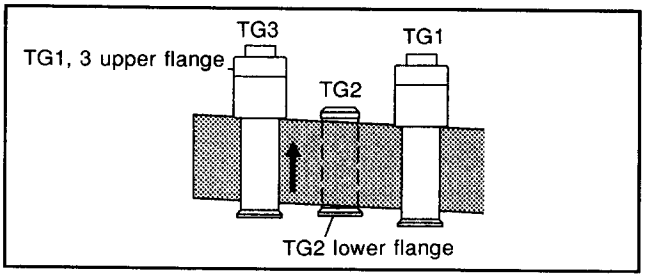


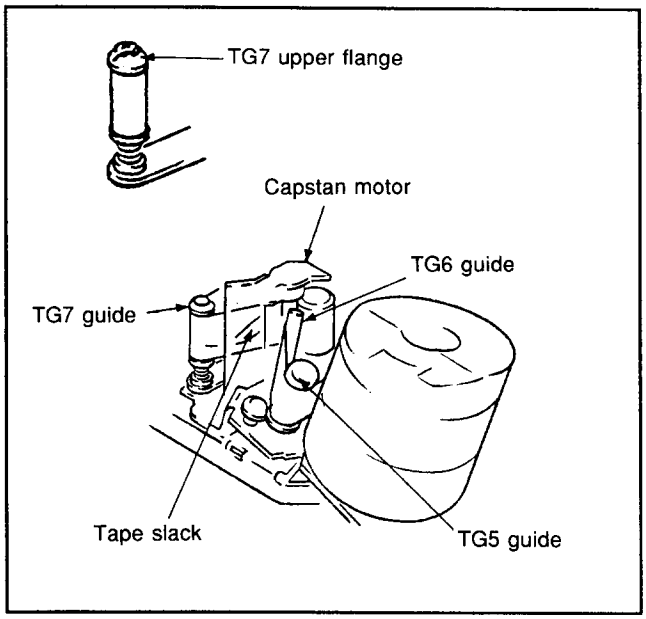
Fig. II

After adjusting the tracking at the entrance, set the RVS mode. If the tape is curled at the lower flange of TG2 guide, rotate the TG2 upper flange clockwise to correct the curl. Rotate the TG3 nut in a 180-degree arc counterclockwise, and check raising tape.



4-4. TG7 GUIDE ADJUSTMENT

1) In the playback mode, check that the tape is not slack between the capstan and TG7 guide.
   Specification: 0.5 mm or less
   If the tape is slack, rotate the TG7 guide and adjust to correct the slack.
2) Set the REV and check the RF waveform at the exit. (See Fig. III)
3) If the waveform is unsatisfactory,rotate the TG7 upper flange in a 90-degree arc counterclockwise and check the step 1) and 2) again.
4) Apply the screw lock (Ref No. J-20) to the part of screw on TG7 guide.



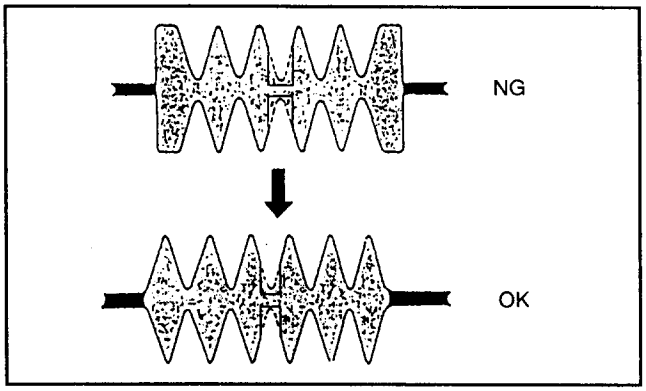


Fig. III

4-5. CHECKS AFTER ADJUSTMENTS

1. Tracking check

1) Playback the tracking tape (XH2-1) (Ref No.J-5). (See Fig. IV)
2) When the waveform's amplitude of CUE (or REV) is (A= 100%), check the amplitude of RF waveform becomes approx. 0.65A (65%) during playback.

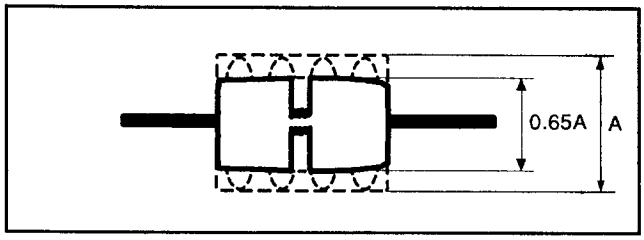


Fig. IV

3) When the waveform's amplitude of CUE (or REV) is (A= 100%), check the difference between the minimum amplitude (Emin) and the maximum amplitude (Emax) for FWD is 30% or less. (See Fig. V)

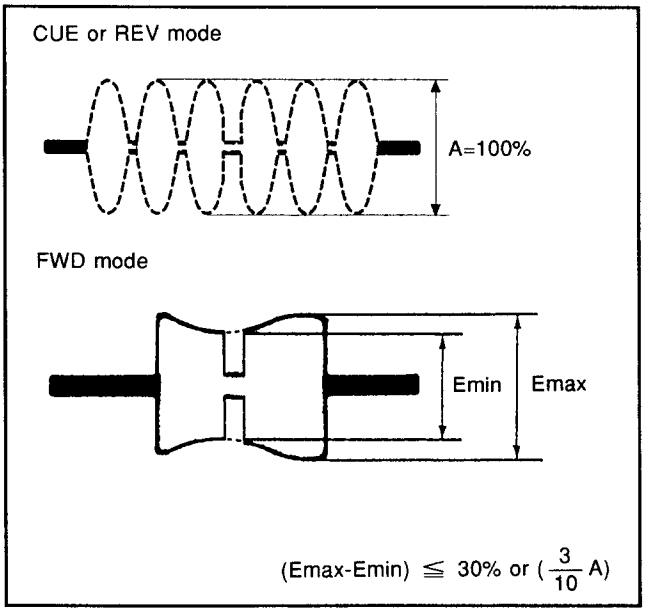


Fig. V

4) Check the waveform does not fluctuate badly. (See Fig. VI)

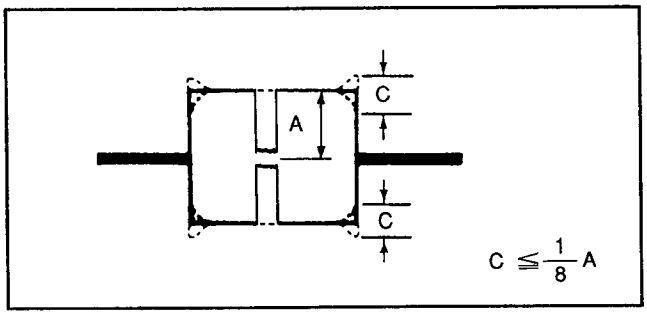


Fig. VI

2. CUE AND REV CHECKS

1) Playback the tracking tape (XH2-1) (Ref No. J-5) and set the REV. The peak pitches of the waveform at this time must be uniform. (See Fig. VII)
   If not uniform, carry out "4-2. TRACKING ADJUSTMENT" and "4-4. TG7 GUIDE ADJUSTMENT".
2) Set the CUE. The peak pitches of the waveform at this time must be uniform. (See Fig. VII)
   If not uniform, carry out "4-2. TRACKING ADJUSTMENT".

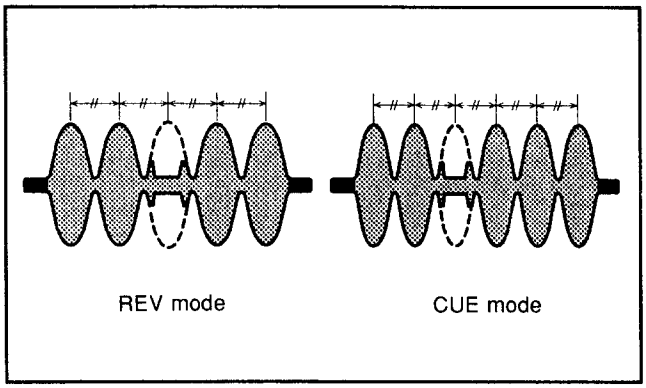
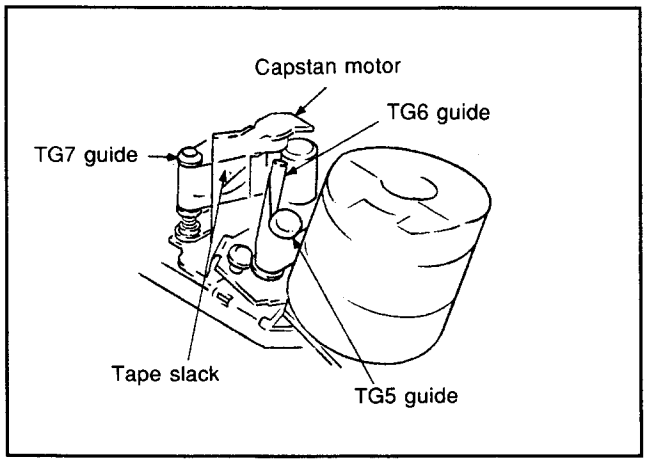


Fig. VII

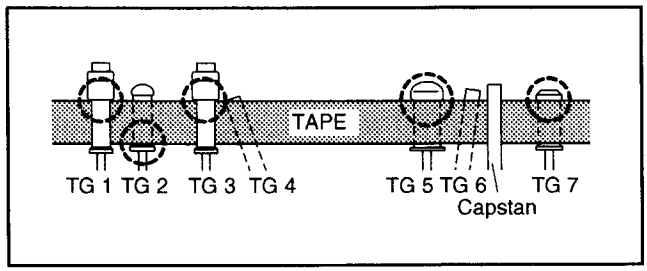
3. RISING CHECK

1) Playback the tracking tape (XH2-1) (Ref No. J-5).
2) Set the PLAYBACK mode, and check the RF waveform rises horizontally within one second. Also check the tape around the pinch roller is not slack.
3) Playback the tape after CUE/REV and FF/REW, and check the RF waveform rises horizontally within one second.
4) Repeat the checks at steps 2) and 3).

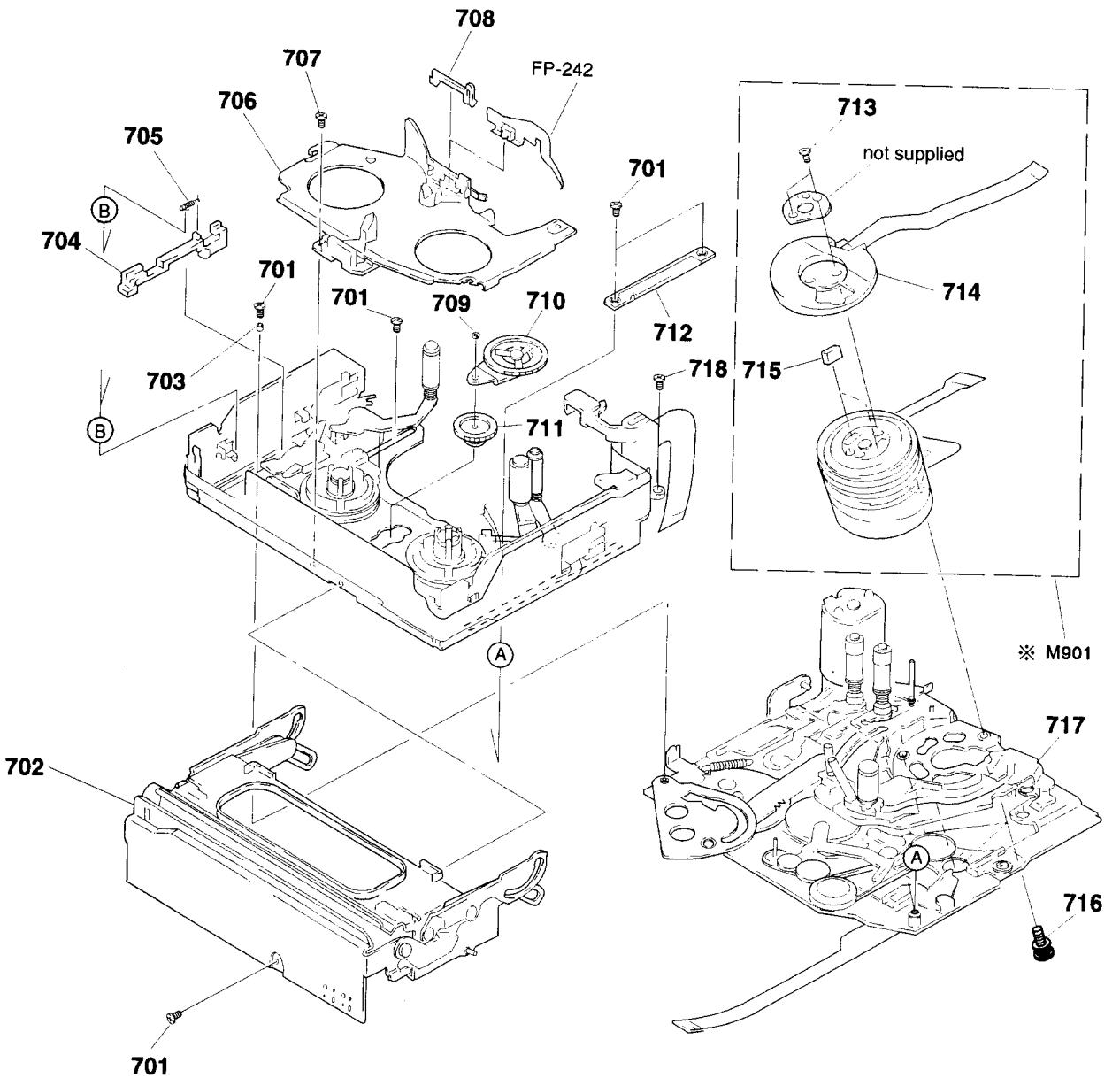


4. TAPE PATH CHECK

Check that the tape is not curled badly on each TG1 upper flange, TG2 lower flange, TG3 upper flange, TG5 upper flange and TG7 upper flange in the setting of CUE and REV.

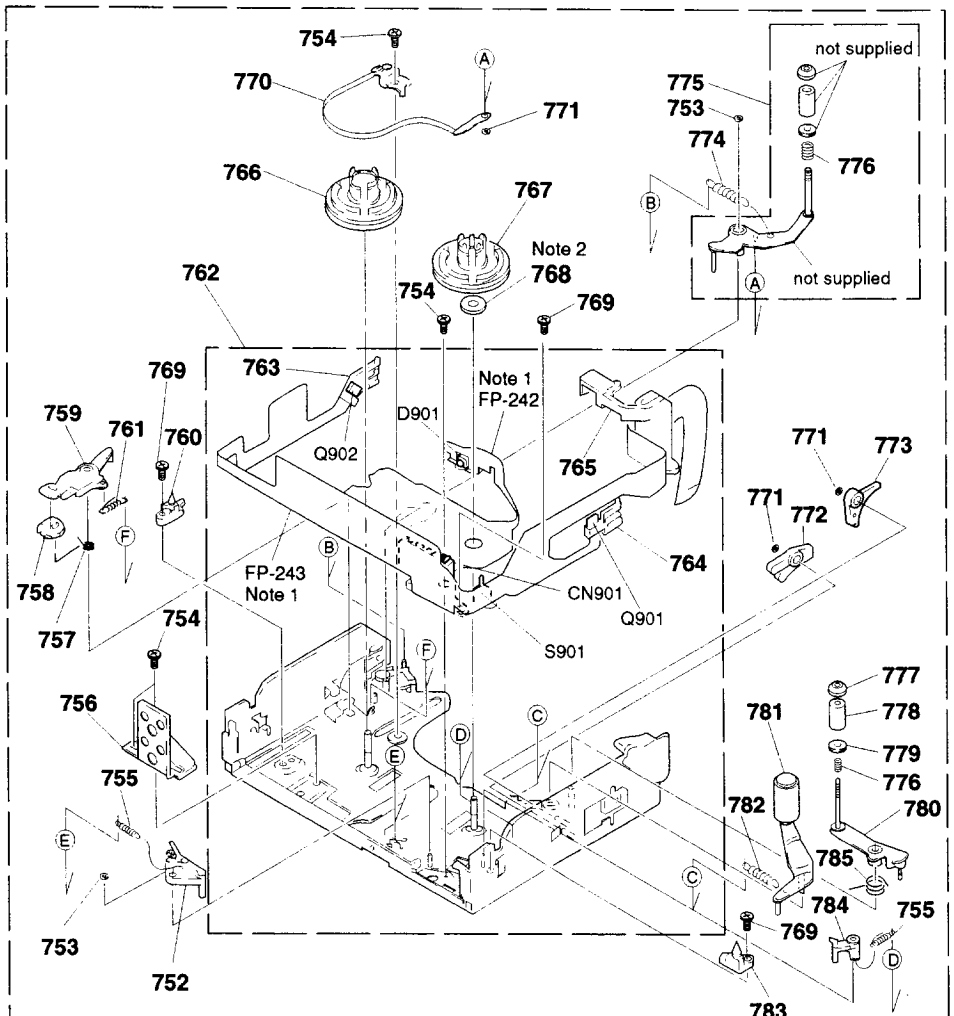


CASSETTE COMPARTMENT AND DRUM ASSEMBLIES



LS CHASSIS ASSEMBLY

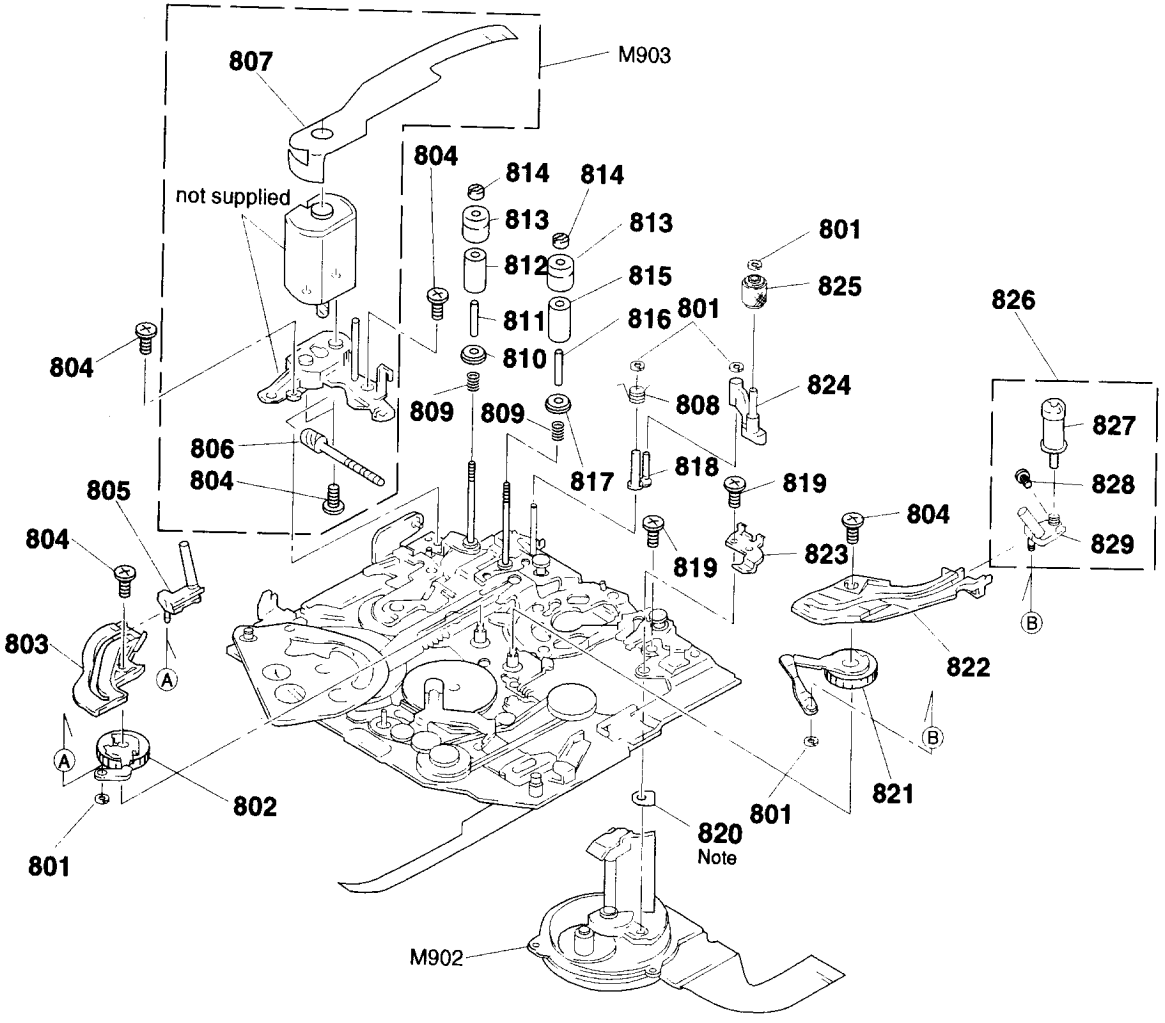
Note 1: About FP-242 and FP-243
The FP-242 and FP-243 flexible boards are installed to a chassis with a hot press, which are included in the Ref. No. 762 LS chassis (S) assembly. They are not supplied separately because the high precision for installation is needed.



Note 2: Selecting the T washer
Select proper parts for the Ref. No. 768 T washer according to "3-21. Height adjustment for each reel table" on page 23.

MECHANISM CHASSIS ASSEMBLY (1)

Note: Be sure to remember the installed position (one of two positions), direction and thickness of the Ref. No. 820 (head spacer) when the M902 (capstan motor) is removed. Refer to "3-9. Capstan motor" on page 15 for details. The thickness of head spacer is normally 100 μm. If it is lost, two 50 μm head spacers will be needed. Be careful not to loose it.



MECHANISM CHASSIS ASSEMBLY (2)